2005

Northwest Area Fire Weather Annual Operating Plan

Seattle

Portland

Medford

Spokane

Pendleton

Boise

Table of Contents

NEW FOR FIRE SEASON 2005

- **Terminology in Lightning Activity Level and Red Flag Warnings**

The term "scattered" replaces the term "widely scattered" for lightning coverage as a Red Flag Warning criteria weather element for the Seattle NWS office.

- **"Episode" lightning definition**

To avoid confusion, NWS offices will not use the term "episodic" lightning when describing potential thunderstorm outbreaks with little rainfall. Rather, such events should be described as sufficient lightning strikes during dry fuel conditions to cause multiple ignitions. Strikes are accompanied by so little rainfall that fuel moisture remains essentially unchanged.

- **Names of fire weather zones**

The Portland NWS office will use the following names for its fire weather forecast zones:

ZONE 601: North Oregon Coast-South Washington Coast including Willapa Hills
ZONE 612: Central Oregon Coast
ZONE 602: North Coast Range
ZONE 603: Central Oregon Coast Range
ZONE 604: Willamette Valley and Clark County
ZONE 605: North Oregon Cascade Foothills
ZONE 606: Central Oregon Cascade Foothills
ZONE 607: North Oregon Cascades
ZONE 608: Central Oregon Cascades
ZONE 660: South Washington Cascades and Foothills

- **Zone boundary change**

The boundary between fire weather zone 609 and fire weather zone 631 in the Pendleton NWS office forecast district has been adjusted at the request of fire management. See the latest map on page 59.

- **New NWS spot forecast request form D-1**

An electronic copy of the new NWS D-1 spot forecast request form can be found at:

http://www.wrh.noaa.gov/pdt/forecast/fireWeatherReports/spotRequestForm.pdf

- **NORTHWEST GEOGRAPHIC AREA FIRE WEATHER ZONE MAPS**

Graphics of the current fire weather zone boundaries in Oregon are available at the following links:

Oregon statewide version:

http://www.odf.state.or.us/DIVISIONS/protection/fire_protection/smoke/fwz_sm.jpg

Graphics of the current fire weather zone boundaries around the Northwest Geographic Area are available at the following links:

NWS Seattle office
http://www.or.blm.gov/nwcc/nwcc-reports/publications/seattle_leg.jpg

NWS Portland office
http://www.or.blm.gov/nwcc/nwcc-reports/publications/portland_leg.jpg

NWS Medford office
http://www.or.blm.gov/nwcc/nwcc-reports/publications/medford_leg.jpg

NWS Spokane office
http://www.or.blm.gov/nwcc/nwcc-reports/publications/spokane_leg.jpg

NWS Pendleton office
http://www.wrh.noaa.gov//images/pdt/plots/fireZoneMap.gif

NWS Boise office
http://www.or.blm.gov/nwcc/nwcc-reports/publications/boise_leg.jpg

2005

Seattle Fire Weather

Operating Plan

LOCATION

The National Weather Service Forecast Office in Seattle is located at the NOAA Western Regional Center in northeast Seattle. The address is:

National Weather Service
7600 Sandpoint Way N.E.
Seattle, WA 98115-0070

HOURS OF OPERATION

The National Weather Service Office in Seattle is open 24 hours a day, 7 days a week. The fire weather desk will be staffed by an experienced fire weather forecaster normally between the hours of 7:00 a.m. and 5:00 p.m. daily during the fire season - usually late May through October in Western Washington. Staff meteorologists trained in the fire weather forecasting will handle requests for spot forecasts or phone briefings after hours. The exact date for the switch from weekdays only to a seven-days-a-week operation varies each year based on spring weather conditions and user requirements.

Forecast service during the off-season, will be provided by staff meteorologists. This service during the off-season will be available Monday-Friday. Spot forecast requests or phone briefings will be handled by staff meteorologists, trained in the fire weather forecasting, on a 24/7 basis from November through May. Changing from the off-season level of service to the fire-season level of service will be made upon user request.

Certified Fire Weather Forecast Staff

Chris Hill – Meteorologist in Charge
Ted Buehner – Warning Coordination Meteorologist
Brent Bower - Service Hydrologist
Jim Prange – Fire Weather Program Leader/IMET
Andy Haner– Asst. Fire Weather Program Leader/IMET
Carl Cerniglia – Fire Weather Forecaster
Danny Mercer – Fire Weather Forecaster

PHONE NUMBERS

FIRE WEATHER DESK	(206) 526-6088
LEAD FORECASTER	(206) 526-6083
Chris Hill, Meteorologist in Charge	(206) 526-6095 ext 222
Jim Prange, Program Leader	(206) 526-6095 ext 252
Andy Haner, Asst. Program Leader	(206) 526-6095 ext 251

E-MAIL

chris.hill@noaa.gov
jim.prange@noaa.gov
andrew.haner@noaa.gov

INTERNET

Our Internet home page can be found at:

http://www.wrh.noaa.gov/sew/

Click the fire weather link on the main menu to access fire weather products.

Statewide, Internet-based, fire weather briefings will be conducted routinely Monday through Friday at 9:15 a.m. during the fire season. Additional daily, weekend and holiday Internet briefings may be conducted during critical fire weather episodes as coordinated with the land management agencies. Contact this office for the appropriate telephone number and conference ID to participate in the conference calls.

Requests for spot forecasts can be made via our Internet web site at http://www.wrh.noaa.gov/sew/. Click the “Fire Weather” link, then “Web-Based Fire SPOT Request” near the top of the page. Completed spot forecasts will be posted to the web server within 30 minutes of the original request. This provides a one-stop-shopping method for requesting and obtaining spot forecasts. The Internet web site is the preferred format for requesting Spot Forecasts. Please notify the NWS Seattle if no spot forecast is posted after 30 minutes.

FORECAST DISTRICT

The Seattle Fire Weather Office has forecast responsibility for most state and federal land in Western Washington. The Portland Fire Weather Office handles the Gifford Pinchot National Forest south of a line from Mt. St. Helens to Mt. Adams to the Oregon border. The Seattle fire weather district is divided into 5 distinct areas or districts for fire weather forecasting. The areas are further divided into 13 separate fire weather zones. Each fire weather zone is comprised of fire weather stations that exhibit similar weather and/or weather changes. However, not all of the fire weather stations report on a regular basis.

FORECAST PRODUCTS

1. FIRE WEATHER PLANNING AND LAND MANAGEMENT FORECASTS

   During the "fire season", twice-daily Fire Weather Planning Forecasts are issued by 8:30 AM and 3:30 PM. NFDRS Zone Trend forecasts are issued daily with the afternoon Fire Weather Planning Forecast. Routine Land Management forecasts are

issued daily during the "off-season", from about mid-October to mid- May. Land Management forecasts are available in WIMS and on the Internet by 9:00 AM.

2. FIRE WEATHER WATCHES AND RED FLAG WARNINGS

General information about Fire Weather Watches and Red Flag Warnings is included in the main portion of this operating plan. Fire Weather Watches and Red Flag Warnings will be issued during Fire Season when the Energy Release Component, as described by the National Fire Danger Rating System, is equal to or greater than the 90th percentile value in the frequency distribution of historical ERCs, and the following conditions described below are either occurring or forecast to occur within the next 72 hours. The table below shows the 90th percentile ERC values that will be used for each fire weather zone.

90th Percentile ERC

Zone 649:	17
Zone 650, 651, 653, 656, 657	25
Zone 652, 654, 655, 658, 659	31
Zone 661	34
Zone 662	57

Strong East Winds and Low Humidity (Westside zones only)

- Nighttime hours (midnight to 7 am):

  Duration: 5 hours

  Wind Speed: 20 ft /10 minute average wind greater than or equal to 10 mph

  RH: less than or equal to 35%.

- Daytime hours (7 am to midnight):

  Duration: 4 hours in an 8 hour block

  Wind Speed: 20 ft/10 min average wind greater than 10 mph

  RH: less than or equal to 30%, except less than or equal to 25% on the Gifford-Pinchot NF south of the Cowlitz River.

  Note: Since many fire weather stations in Western Washington do not show good exposure to strong east winds, a Red Flag Warning during east wind episodes will verify if the above-mentioned wind criteria is reported by at least 3 of the

following stations: Ellis Mt., Minot Peak, Greenwater, Lester, Stampede Pass, or Kosmos Mountain. Historical fire weather records indicate these sites are key indicators of strong east winds and low relative humidity values.

Strong West Winds and Low Humidity (<u>Eastside zone 662 only</u>)

Duration: at least 4 hours

Wind Speed: 20 ft /10 minute average wind greater than or equal to 15 mph

RH: less than or equal to 25%.

Stehekin and Camp Four RAWS will be used to verify Red Flag Warnings in zone 662.

The conditions described above should be fairly widespread in both time and space across the fire weather zone - as opposed to an isolated incident or a diurnal occurrence that lasts for only a few hours.

Lightning

Dry lightning (LAL 6) occurs when the environment below the cloud base is so dry that passing thunderstorms produce little or no precipitation at the surface. A Fire Weather Watch or Red Flag Warning will be issued for this event when the zone-averaged ERC is in the 90th percentile, or higher, and dry lightning is either expected or already occurring. The activity must be **<u>scattered (25-54% aerial coverage) or greater</u>** within a particular zone, and fewer than two stations in the zone report 0.25" of rainfall from the passing thunderstorms on the west side of the Cascades and 0.20" in zone 662 on the east side of the Cascades.

A Fire Weather Watch or Red Flag Warning will also be issued for the occurrence of scattered or greater lightning activity within a particular zone, either wet or dry, after an extended dry spell when the zone-averaged ERC is in at the 90th percentile or greater.

Each potential Red Flag event will be coordinated with local land management agencies to ensure environmental conditions are sufficiently critical to justify the issuance of a watch or warning.

3. <u>TRANSPORT AND STABILITY FORECASTS</u>

Transport and stability forecasts will be appended to every Fire Weather Planning and Land Management forecast issued by Seattle. These forecasts include information on air mass stability, afternoon mixing heights of surface-based air, and free air winds from 3,000 feet to 7,000 feet for the next 48 hours.

4. SPOT FORECASTS

Mission Connection: WFO Seattle will issue spot forecasts in support of wildfire suppression and natural resource management. These forecasts aid the land management and fire control agencies in protecting life and property during wildland fires, hazardous fuels reduction, and rehabilitation and restoration of natural resources. Spot forecasts may also be issued for hazardous materials incidents and other threats to public safety.

Issuance Criteria: Spot forecasts are non-routine products issued at the request of the user. WFO Seattle will provide spot forecast service upon request of any federal, state, tribal, or local official who represents the spot forecast is required to support a wildfire.

For non-wildfire purposes, resources permitting, WFO Seattle will provide spot forecast service under the following circumstances and conditions:

a. Upon request of any federal official who represents that the spot forecast is required under the terms of the Interagency Agreement for Meteorological Services (NWS Instruction 10-406).

b. Upon request of any state, tribal, or local official who represents that the spot forecast is required to carry out their wildland fire management responsibilities in coordination with any federal land management agency participating in the Interagency Agreement for Meteorological Services (NWS Instruction 10-406).

c. Upon request of any public safety official who represents the spot forecast is essential to public safety, e.g. due to the proximity of population centers or critical infrastructure. A “public safety official” is an employee or contract agent of a government agency at any level (federal, state, local, tribal, etc.) charged with protecting the public from hazards including wildland fires of whatever origin and/or other hazards influenced by weather conditions such as hazardous material releases.

WFO Seattle will not provide spot forecasts to private citizens or commercial entities not acting as an agent of a government agency.

Information required by the fire weather forecaster from the requesting agency is found on WS Form D-1. Spot forecasts for wildfire suppression will take precedence over normal office routines.

AGENCIES SERVED

The Seattle Fire Weather Office serves the following state and federal land management agencies:

United States Forest Service - Olympic National Forest, Mt. Baker-Snoqualmie National Forest, Gifford-Pinchot National Forest and Okanogan National Forest

National Park Service - North Cascades National Park, Olympic National Park, Mt. Rainier National Park and San Juan Islands National Park

Bureau of Indian Affairs - Olympic Peninsula Agency and Puget Sound Agency

Washington Department of Natural Resources -
Resource Protection Division, Northwest, Olympic, South Puget Sound, and Pacific Cascade regions.

FIRE WEATHER ZONE BOUNDARY DESCRIPTIONS

A detailed map of the fire weather zone boundaries is included at the end of this section.

Zone 649: The western boundary of fire weather zone 649 is the Pacific coastline in Clallam, Jefferson, and Grays Harbor counties. The eastern boundary includes all Federal, State and private land within 5 miles of the Pacific coastline in Clallam, Jefferson, and Grays Harbor Counties. It extends south along the eastern border of the Makah Indian Reservation and the east shore of Ozette Lake to the town of Quillayute in Clallam County. In Jefferson County, the eastern boundary crosses US Highway 101 approximately 5 miles east of the Hoh Indian Reservation, then parallels the coast south until crossing US Highway 101 again along the border between Jefferson and Grays Harbor counties 5 miles inland from the coast. The eastern border continues south in Grays Harbor county until it crosses highway 101 at New London and US Highway 12 approximately 5 miles east of Aberdeen. The boundary then turns south, following US Highway 101 to the southern border of Grays Harbor county.

Zone 650: Zone 650 includes all State, Federal and private land 5 miles inland from the coast to an elevation of 1500 ft on the western side of the Olympic Mountains in Clallam, Jefferson, and Grays Harbor Counties. The area includes the low elevation portion of the Calawah, Bogachiel, Hoh, Clearwater, Queets, Quinault, and the Humptulips River drainages below 1500 ft. The southern boundary begins where the Humptulips River crosses the southern boundary of Zone 652, stretching southwest along the Humtulips River until it intersects the eastern boundary of zone 649 in Grays Harbor County.

Zone 651: The western boundary of zone 651 follows the Humptulips River and the eastern boundary of zone 649 in Grays Harbor County. The 1,500 foot contour interval on the south side of the Olympic Mountains forms the northern border of zone 651. The county line between Grays Harbor County and Pacific County forms the southern boundary. The eastern border follows the West Fork of the Satsop River south across US Highway 12 near the town of Satsop, continuing south along the west side of the Lower

Chehalis State Forest. Zone 651 is mostly State and Private land, but also includes Forest Service land below 1500 ft in the Humptulips and Wynochee River drainages.

Zone 652: Zone 652 includes US Forest Service, National Park Service, and Washington State lands at or above 1500 feet located in the western half of Clallam and Jefferson counties, and the far northeast corner of Grays Harbor county. The area includes the Pacific Ranger District office on the west and southwest side of the Olympic National Forest. Zone 652 is the wetter, west side of the Olympic Peninsula that reflects a greater influence of marine air in both weather and fire danger. The area includes all private, federal and state lands at or above 1,500 feet drained by the Calawah, Sitkum, Bogachiel, Hoh, Clearwater, Queets, Quinault, and Humptulips rivers in Clallam, Jefferson, and Grays Harbor counties.

Zone 661: Zone 661 includes private, federal and state land at or above 1,500 feet on the east side of the Olympic Peninsula. The area typically exhibits higher fire danger than zone 652, due to less rainfall, less influence of marine air, and a higher occurrence of lightning activity. The area includes lands at or above 1,500 feet drained by the Wynoochee, Satsop, North and South Fork Skokomish, Hamma Hamma, Duckabush, Dosewallips, Quilcene, Dungeness, and the Elwha rivers.

Zone 653: Zone 653 includes all lands below 1500 ft msl on the north side of the Olympic Peninsula from the town of Sekiu on the west to a point just south of Discovery Bay on the east. The boundary extends southeast across Admiralty Inlet, east across the northern tip of the Kitsap Peninsula and Puget Sound to Interstate 5 along the border between King and Snohomish Counties. The eastern boundary of zone 653 parallels I-5 north through Snohomish, Skagit and Whatcom counties to the Canadian border.

Zone 654: Zone 654 includes lowland areas below 1,500 feet near the central and southern portion of Puget Sound and Hood Canal. The eastern boundary parallels I-5 south though King and Pierce counties, west through Olympia in Thurston County, then northwest along U.S. Highway 101 to city of Shelton. The boundary continues northwest form Shelton to the southeast corner of the Olympic National Forest in Mason County, then follows the 1500 ft contour northeast along the Hood Canal in Mason and Jefferson Counties.

Zone 655: The eastern border of zone 655 follows the West Fork of the Satsop River south across US Highway 12 near the town of Satsop, continuing south along the west side of the Lower Chehalis State Forest to the town of Brooklyn in northeast corner of Pacific County. From Brooklyn the boundary extends southeast to the town of Pe El in the eastern portion of Lewis County and then continues southeast to the town of Vader in Lewis County. The border then runs east along the southern border of Lewis County to the 1,500 foot contour along the west slopes of the Cascades. The boundary follows the contour on the north and south sides of the Cowlitz river valley. It then continues north along the 1,500 foot contour to the boundary between Thurston and Lewis Counties. The zone boundary then extends east to the intersection of Pierce, Thurston, and Lewis Counties. It then follows the Pierce/Thurston County boundary northwest to the

intersection of I-5 and then west along I-5 to US Highway 101. Zone 655 then extends northwest paralleling 101 to the southeast corner of the Olympic National Forest in Mason County. The area includes the Capitol State Forest and the Lower Chehalis State Forest.

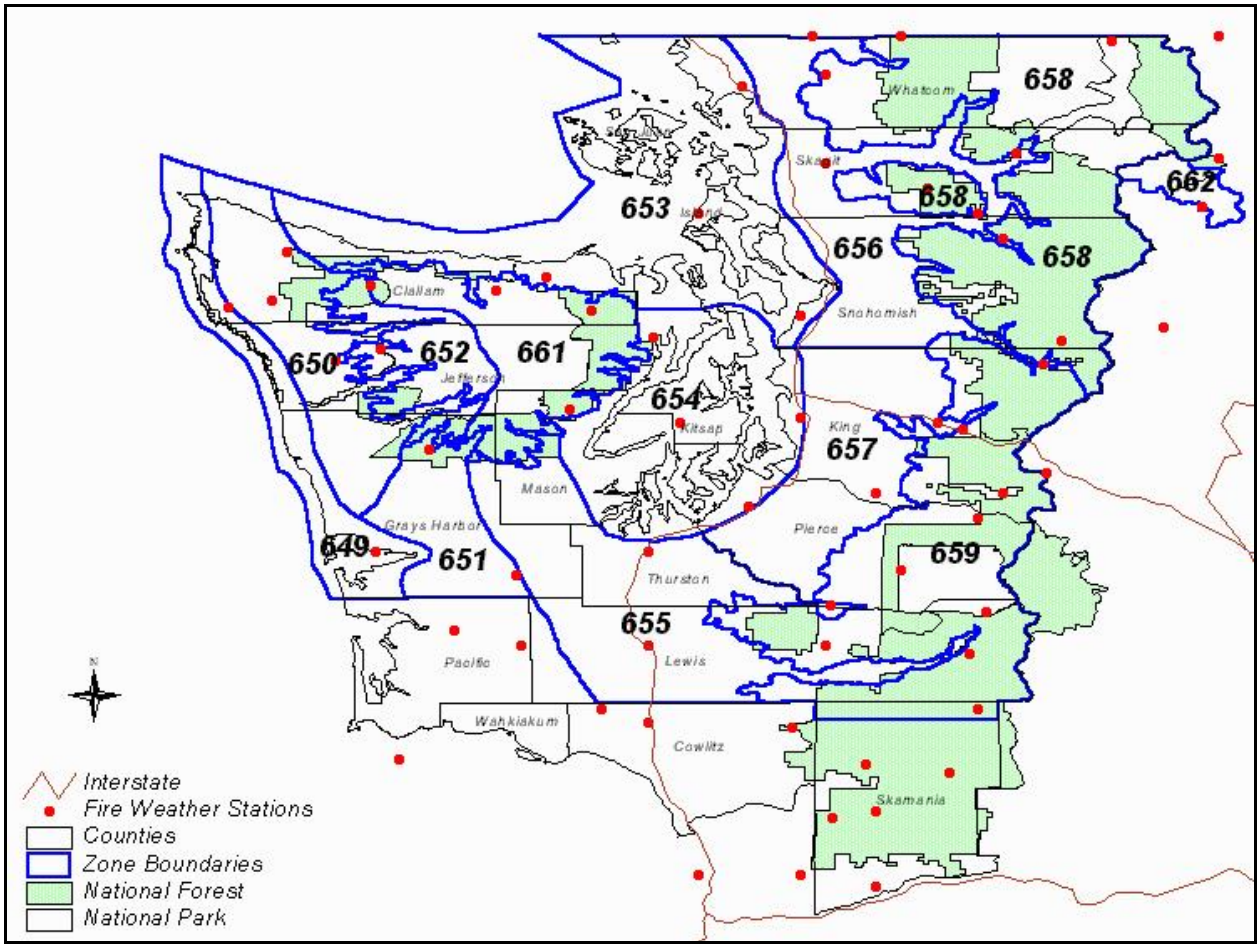
Zone 656: Zone 656 includes all State and Private lands in Whatcom, Skagit, and Snohomish Counties east of I-5 below an elevation of 1500 feet. This includes the following river drainages...North, Middle and South Forks of the Nooksack River, Skagit River from town of Sedro Woolley to the town of Marblemount (including Lake Shannon and Baker Lakes in the Baker River drainage), Sauk River from the confluence of the Sauk and Skagit Rivers south along SR 530 to the town of Darrington, the Stillaguamish River from Darrington to the town of Arlington, and the Skykomish River along US Highway 2 from the town of Monroe to six miles east of the town of Skykomish.

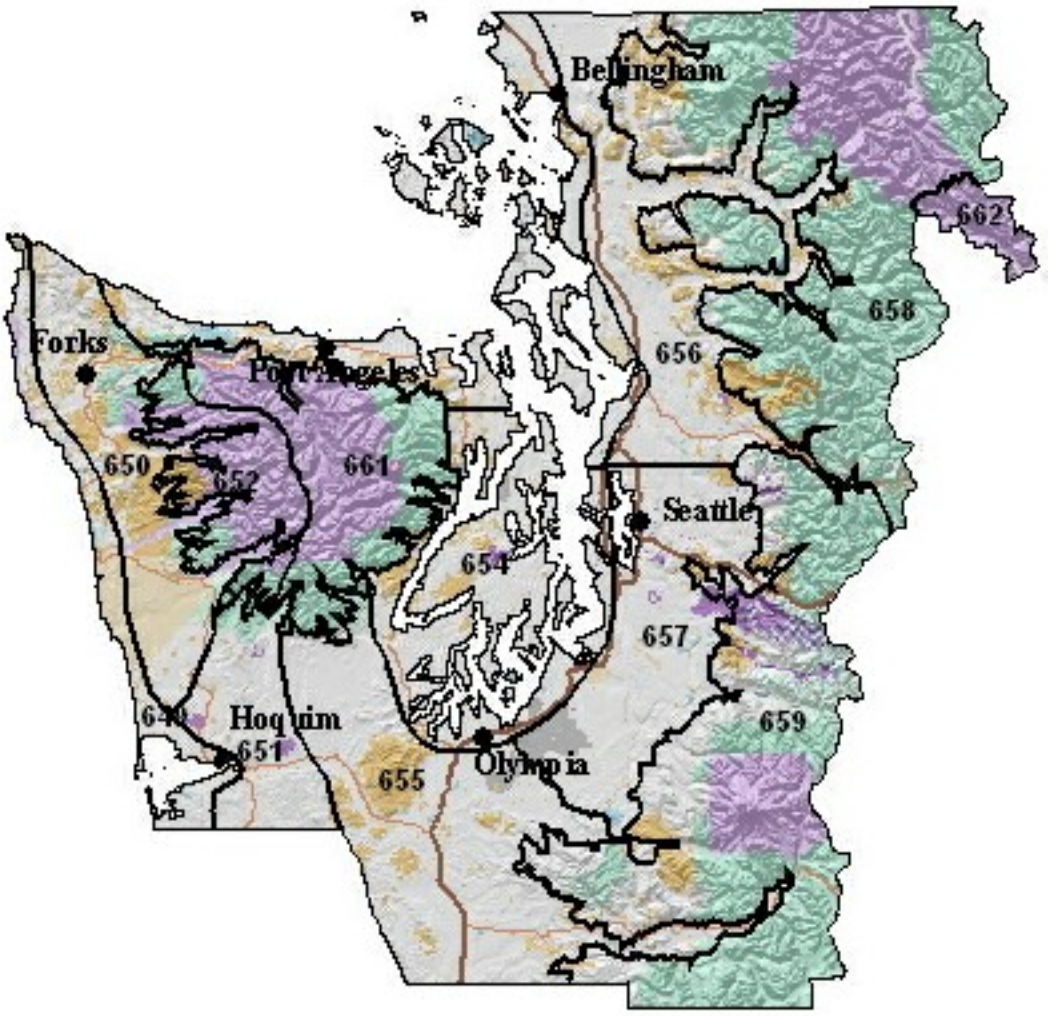
Zone 657: Zone 657 includes land below 1500 ft east of I-5 in King and Pierce Counties. The southern border of the zone follows the border between Pierce and Thurston Counties. This area includes the following river valleys below 1500 ft that reach into the Cascade Mountains...North, Middle and South Fork of the Snoqualmie River, White River including Mud Mountain Lake, Puyallup River, and the Nisqually River to the town of Ashford.

Zone 658: Zone 658 includes Federal, State and Private lands at or above 1500 feet in Whatcom, Skagit, Snohomish, and the northeast portion of King County in the Skykomish River drainage. The area includes the North Cascades National Park and the Ross Lake National Recreational Area, and the Mt. Baker, Darrington, and Skykomish Ranger Districts of the Mt.Baker-Snoqualmie National Forest. The eastern boundary is the Cascade crest.

Zone 659: Zone 659 includes Federal, State and Private lands at or above 1500 ft in King, Pierce, and Lewis Counties, and the extreme northern portion of Skamania County. This includes the North Bend and White River Ranger Districts of the Mt. Baker-Snoqualmie National Forest, Mt. Rainier National Park, and the Cowlitz Valley Ranger District of the Gifford Pinchot National Forest. The eastern boundary of this zone runs along the crest of the Cascades.

Zone 662: Zone 662 includes federal lands managed by the North Cascades National Park east of the Cascade crest in Chelan county. This area includes the Lake Chelan National Recreational Area and the North Cascades National Park South Unit.


658
Whatcom
Skagit
662
653
658
656
658
Clallam
Snohomish
650
652
661
Jefferson
654
Kitsap
King
657
Mason
Grays Harbor
Pierce
649
651
659
Thurston
655
Pacific
Lewis
Wahkiakum
Cowlitz
Skamania
Interstate
Fire Weather Stations
Counties
Zone Boundaries
National Forest
National Park


Bellingham
662
658
Forks
656
650
652
661
Seattle
654
657
659
651
655

2005

Portland Fire Weather

Operating Plan

PORTLAND FIRE WEATHER

LOCATION

National Weather Service Forecast Office
5241 NE 122nd Avenue
Portland, OR 97230-1089

HOURS

The National Weather Service Office is open 24 hours a day, 7 days a week. The fire weather duty desk will be staffed with a **CERTIFIED** fire weather forecaster between the hours of 0600 and 1600 seven days a week during fire season, normally from Memorial Day through mid-October. The fire weather desk is staffed with a **CERTIFIED** fire weather forecaster from 0700 to 1500 Monday through Friday during Spring burning (mid to late March through Memorial Day), and also during the fall burning period (mid-October through early November).

STAFF

Steve Todd	Meteorologist in Charge
Tyree Wilde	Warning Coordination Meteorologist
Scott Weishaar	Fire Weather Program Leader and IMET
John Saltenberger	Fire Weather Program Leader and IMET
Clinton Rockey	Fire Weather Forecaster
Dave Willson	Lead Forecaster and Fire Weather Forecaster
Chris Collins	Fire Weather Forecaster
Kirsten Willman	Fire Weather Forecaster

CONTACT

Telephone

Fire Weather Desk	503-326-2420
Lead Forecaster (24 hrs)	503-326-3720
FAX	503-326-2598

Internet

http://www.wrh.noaa.gov/Portland/fwx.htm

Email

scott.weishaar@noaa.gov
john.saltenberger@noaa.gov

FORECAST DISTRICT

Portland services fire weather zones 601-608, 612, and 660. This area covers:

Northwest Oregon and Southwest Washington, North Oregon Cascades including the Columbia River Gorge (to about Hood River). South Washington Cascades and adjacent lowlands of Clark County. The Portland Office is also responsible for spot forecasts in the east districts of the Mt. Hood National Forest (Barlow District).

See the attached map for a graphic description of individual areas/zones of the Portland district.

AGENCIES SERVED

U.S. Forest Service (USFS)
U.S. Bureau of Land Management (BLM)
Oregon Department of Forestry (ODF)
Washington Department of Natural Resources (WDNR)
Various urban and rural local fire districts

FORECAST SERVICES

GENERAL FORECASTS:

Fire Season: Regularly scheduled general fire weather forecasts are issued twice per day by **CERTIFIED** fire weather forecasters at 0900 and 1445.

Prescribed Burning Season: Regularly scheduled land management forecasts are issued by **CERTIFIED** fire weather forecasters Monday through Friday at 0900 and 1430.

Off-season: A land management forecast is issued once per day (approximately 0500) November through early March by the general forecast staff.

NEW: Wind gusts **WILL** be mandatory in the general forecast when the 10-minute sustained wind speed is 15 mph or greater. The Portland office will include wind gusts when the 10-minute wind speed is 10 mph or greater.

"Dryness Levels" (as developed by the Northwest Coordination Center) for the NWS Portland forecast district will be included in the morning forecast. Refer to the NWCC Predictive Services web site for more information. http:/www.or.blm.gov/nwcc/nwcc-reports/Intel_Menu.htm

SPOT FORECASTS

Detailed weather information beyond what is presented in the general forecast may be obtained with a spot forecast request. Spot forecasts may be requested by a telephone call to the fire weather forecaster or through the spot forecast request web page available on the Portland fire weather web page URL listed in the CONTACT section.

Spot Forecasts for prescribed burning: Spot forecast requests for prescribed fire are best initiated prior to 1100 on the planned day of the burn. Requests may also be entered into the spot forecast web page several days prior to planned ignition. In either case, ***A WEATHER OBSERVATION FROM THE BURN SITE WITHIN SIX HOURS OF PLANNED IGNITION IS REQUIRED***. Spot forecasts will be valid 12 hours after planned ignition. The user must request updates beyond 12 hours. Spot forecasts **WILL** be updated for unforeseen events. The appropriate agency (dispatch office) **WILL** be notified of any updates.

Spot Forecasts for wildfires: Spot forecasts for wildfires may be requested at any time and will take priority over other station duties. Spot forecasts will be handled by a **CERTIFIED** fire weather forecaster. This may require that a qualified fire weather forecaster be called in on overtime. Overtime costs will be charged to the incident.

TELEPHONE BRIEFINGS

Daily internet conference call: Portland fire weather conducts a daily weather briefing via a conference call from about early June through early October. Fire weather users are encouraged to participate. The forecaster hosting the briefing will verbally highlight current and forecast fire weather conditions with the help of an internet web page. Conference call participants can follow along with the discussion while viewing graphics displayed on the web page. Conference call times and telephone numbers (and passcodes) can be obtained by contacting the Portland weather office.

Unscheduled telephone briefings: Verbal weather briefings can also be obtained at any time. A **CERTIFIED** fire weather forecaster should be requested to conduct the briefing during fire weather hours. Otherwise, a briefing will be available from the general forecast staff.

FORECAST SERVICES (CONT)

Fuels must be critically dry and fire danger moderate to high before a Red Flag Warning or Fire Weather Watch is issued from the Portland office. Evaluations of fuel conditions will be made in accordance with current NFDRS values and in consultation with fire managers. Assuming these conditions are met, Fire Weather Watches and Red Flag Warnings are usually issued for the following events:

1. COMBINATION OF STRONG WIND AND LOW HUMIDITY

NIGHTTIME CRITERIA:

ZONES 601 AND 602: Two stations (RAWS) must report 35% humidity or less **AND** 10-minute wind speed of 10 mph or more for three hours in an 8-hour time block. Key RAWS: Cedar Creek, Rockhouse1, and South Fork.

ZONES 603 AND 612: Rockhouse1 RAWS reporting 35% humidity or less **AND** 10-minute wind speed of 15 mph or more for four hours in an 8-hour block **AND** one other RAWS reporting 35% humidity or less **AND** 10-minute wind speed of 10 mph or more for two hours. Key RAWS: Rockhouse1, Goodwin Peak, High Point, and Cannibal Mountain.

ZONE 604: Two stations (airports) must report 30% humidity or less **AND** 2-minute wind speed of 15 mph or more for at least four hours in an 8-hour block. Typically occurs in the north part of the valley. KEY STATIONS: Troutdale, Portland, Vancouver, and Hillsboro.

ZONES 605, 607, AND 660: One station (RAWS) must report 35% humidity or less **AND** 10-minute wind speed of 10 mph or more for four hours in an 8-hour block, **AND** at least **TWO** other stations reporting 35% humidity or less **AND** 10-minute wind of 10 mph for at least **TWO** hours. KEY STATIONS: Horse Creek, Log Creek, Wanderer's Peak, Kosmos, Canyon Creek, Orr Creek, and Elk Rock. NOTE: Includes stations from zone 659.

ZONES 606 AND 608: One station (RAWS) must report 30% humidity or less **AND** 10-minute wind speed of 10 mph or more for at least four hours in an 8-hour block, **AND ONE** other station must report the same conditions for at least **ONE** hour. KEY STATIONS: Brush Creek, Trout Creek, Yellowstone, and Emigrant.

FORECAST SERVICES (CONT)

DAYTIME CRITERIA (ALL ZONES):

At least two stations within a zone must report 25% humidity or less AND wind-speed of 10 mph or more (except 15 mph in zone 604) for at least four hours in an 8-hour block.

Typically for east wind (offshore flow), but can occur in the Coast Range and central/south Willamette Valley with north to northeast wind. Can also occur in the Central Cascades and foothills with shallow marine surges (west to northwest wind).

2. CRITICALLY DRY AND UNSTABLE AIR MASS (HAINES INDEX 6)

At least **ONE** station within a zone must report 25% humidity or less and show a high-level Haines value of 6 **AND** fuel conditions (Dryness Levels) are in the "RED". At forecaster discretion, can also be issued when Dryness Level is "YELLOW".

3. LIGHTNING IN COMBINATION WITH DRY FUELS

Dryness Levels **MUST** be in the "RED", and expected lighting frequency is such that multiple starts (5-7) are expected. Typically "scattered" thunderstorm coverage. At forecaster discretion, can also be issued when Dryness Level is"YELLOW". A rare event that would most likely affect the Willamette N.F.. Basically, "scattered" thunderstorms that do not produce enough precipitation to appreciably change the Dryness Levels (from "RED" or high "YELLOW").

NFDRS TREND FORECASTS

A numerical trend forecast is prepared and disseminated to WIMS at about 1545 each afternoon from about late May through early October. In addition, several "point" forecasts are also prepared. The trend forecasts are used to compute the EXPECTED NFDRS indices valid for the following day. The number of NFDRS indices forecast by the weather office depends only on the number of NFDRS observations input into WIMS by the fire agencies. If observations are not entered into WIMS by 1500, a forecast will not be produced for the zone(s).

INCIDENT METEOROLOGIST SERVICES

Portland has two certified Incident Meteorologists (IMETS) on staff available for wildfire, HAZMAT, or other emergency dispatches. To request an IMET, contact the appropriate fire agency dispatch office.

OTHER SERVICES

FIRE WEATHER TRAINING AND LECTURES

An experienced fire weather forecaster will be available to help instruct the weather sections of standard fire behavior training courses offered by federal, state and local government fire agencies. This includes S-190 through S-590 and others. In addition, a forecaster will also be available for special speaking engagements. For scheduling purposes, requests for an instructor or speaker should be made at least three weeks in advance.

NORTWEST GACC SUMMER DETAIL

The Portland office will detail an experienced fire weather forecaster to the Northwest Geographic Coordination Center (GACC) for 40 hours each week March through October. Duties will include publication of the regional fire weather operating plan, keeping GACC staff continuously advised of fire weather conditions and conducting daily “blast-up” weather coordination calls. Duties also include participation in applied climate research projects under the direction of the regional fire weather manager.

FORECAST VERIFICATION

The purpose of verification is to improve the quality of forecasts and warnings issued from the Portland weather office. Weather conditions are recorded and archived on a routine basis during the fire season. These observations are studied and compared against the forecasts and warnings to identify any systematic bias or consistent errors. Verification will focus on Red Flag Warnings, but also include individual NFDRS station forecasts. Verification results are published in the Portland Fire Weather Annual Summary (available on the Portland fire weather internet page or via hard copy in late January or early February).

ANNUAL SUMMARY, ANNUAL OPERATING PLAN and MISC

A summary of climatic statistics, forecast and warning verification, fire danger trends, spot forecast statistics, training rendered, dispatches, critical fire weather events and other noteworthy items is published each year.

An annual operating plan (this document) describing NWS office services, responsibilities, and procedures will be published each year prior to the fire season. The operating plan is available on the Portland fire weather internet page or via hard copy.

The fire weather program leader(s) also maintains the Portland Fire Weather Web page, provides internal NWS training and attends user agency annual conferences.

GEOGRAPHIC ZONE DESCRIPTIONS (INCLUDING NEW NAMES)

Zone 601 – North Oregon and South Washington Coast including Willapa Hills

Represents the South Washington and North Oregon coastal strip including adjacent west slopes of the Oregon Coast Range and the Willapa Hills of Washington. This zone includes the north portion of the Siuslaw N.F., ODF, and WA DNR protected private land.

Extends east-west from the crest of the Oregon Coast Range to the Pacific Ocean. Extends north-south from the north boundary of Pacific County, WA to Oregon State Highway 22 along the eastern boundary of ODF regulated use area NW-2. The Washington section of this zone represents Pacific and Wahkiakum counties in their entirety.

Zone 612 – Central Oregon Coast

Represents the Central Oregon coastal strip including adjacent west slopes of the Oregon Coast Range. Includes southern portions of the Siuslaw N.F. and ODF protected private land.

Extends east-west from the crest of the Oregon Coast Range to the Pacific Ocean. Extends north-south from Oregon State Highway 22 to the Umpqua River along the west edge of the Siuslaw National Forest including ODF regulated use area SL-2.

Zone 602 – North Coast Range

Represents the east slopes of the North Oregon and South Washington Coast Range. Mostly private land under ODF and WA DNR protection.

Bounded on the west by Coast Range crest. Bounded on the east, in Oregon, by the west periphery of the Willamette Valley and Columbia River. Bounded on the east, in Washington, by the contour of the Willapa Hills/Coast Range. Extends north-south from the north boundary of Lewis County, WA to Oregon State Highway 22.

Zone 603 – Central Oregon Coast Range

Represents the east slopes of the Central Oregon coast range. Mostly ODF protected private land.

Bounded on the west by the Coast Range crest. Bounded on the east by the western periphery of the Willamette Valley. The north boundary is along Oregon State Highway 22. The south boundary lies along Oregon State Highway 38.

Zone 604 – Willamette Valley including Clark County Lowlands of Washington

Bounded on the west and east, in Oregon, by the foothills of the Coast Range and Cascades. Bounded on the west and east, in Washington, by the Columbia River and South Washington Cascade foothills. Extends north-south from Lewis County, WA to just south of Cottage Grove Reservoir.

Zone 605 – North Oregon Cascade Foothills

Represents foothill elevations of the North Oregon Cascades. Mostly ODF protected private land.

Bounded by the east periphery of the Willamette Valley on the west and the National Forest boundary of the Mt. Hood and Willamette National Forests on the east. Extends from the Columbia River on the north to Oregon State Highway 22 (Santiam Highway) on the south.

Zone 606 – Central Oregon Cascade Foothills

Represents the foothill elevations of the Central Oregon Cascades. Mostly ODF protected private land.

Bounded by the east periphery of the Willamette Valley on the west (Interstate 5 south of Eugene) and the Willamette Forest boundary, and extreme north Umpqua Forest boundary on the east. Extends from Oregon State Highway 22 on the north to the Lane/Douglas county line on the south.

Zone 607 – North Oregon Cascades

Represents all of the Mt. Hood NF west of the Cascade Crest along with interior Cascade wilderness areas.

Bounded by the Columbia River on the north, the Cascade Crest on the east, and the Mt. Hood forest boundary on the south and west.

Zone 608- Central Oregon Cascades

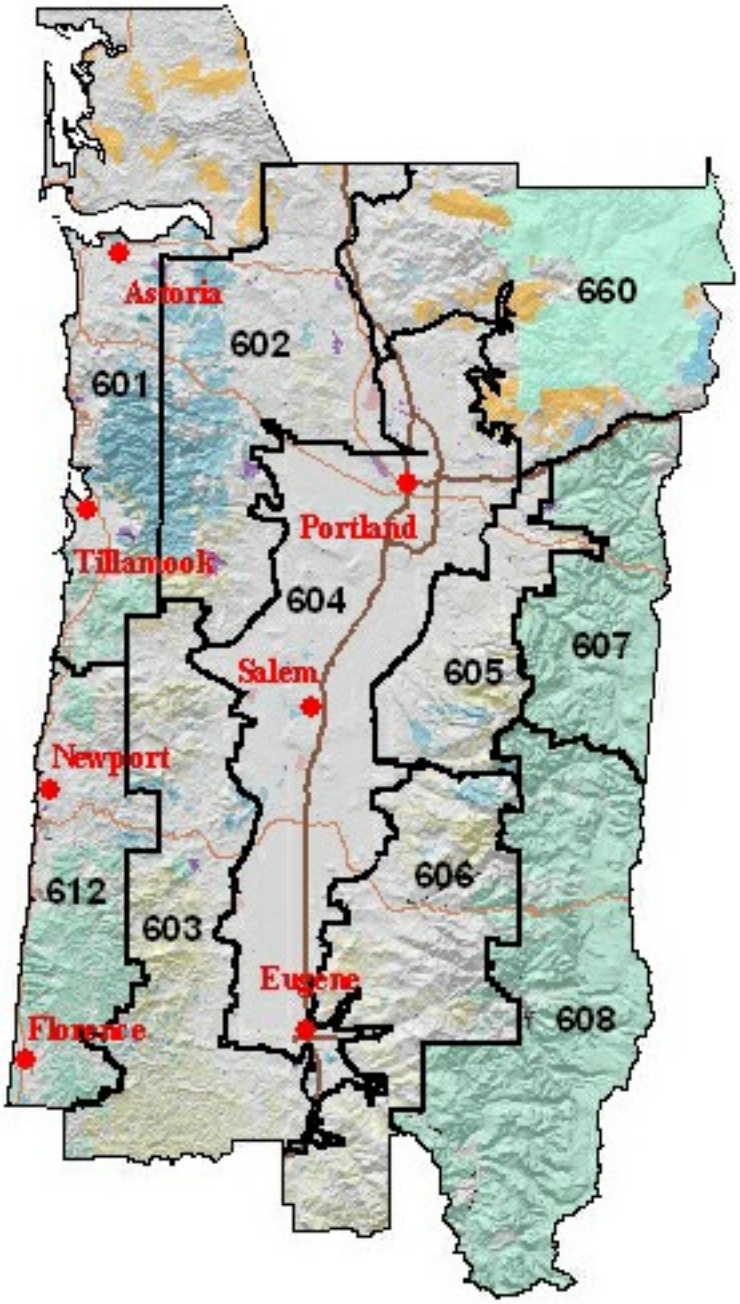
Represents the Willamette NF in its entirety along with interior high Cascade wilderness areas.

Bounded by the Cascade Crest on the east and the Willamette Forest boundary on the south, west, and north.

Zone 660 – South Washington Cascades and Foothills

Represents the Wind River, Mt. Adams and St. Helens Ranger districts of the Gifford Pinchot NF as well as adjacent WDNR protected Cascade and Green Mountain foothills to the south and west. It excludes the Columbia River lowlands of Clark County, WA, which is part of zone 604.

Bounded on the east by the Gifford Pinchot east forest boundary (approximately the Cascade Crest). The southeast boundary follows the Columbia River west to the Clark County, WA line. Then, the boundary heads north to northwest following the contour of the Cascade foothills to the Lewis River, then west along the Lewis River to the Columbia River. The boundary follows the Columbia River north to Kelso, WA. The north boundary extends from Kelso, WA northeast following the contour of the Green Mountain/Cascade foothills to the Lewis County line, then east to the Cascade Crest, bi-secting the Gifford Pinchot NF along the north boundary of the St. Helens and the Mt. Adams Ranger districts.


Astoria
602
601
660
Portland
Tillamook
604
607
Salem
605
Newport
606
612
603
Eugene
608
Florence

2005

Medford Fire Weather

Operating Plan

Medford Fire Weather
2005 Annual Operating Plan

LOCATION

4003 Cirrus Drive
Medford, Oregon 97501

Medford Fire Weather is located at the Medford National Weather Service Office near the Rogue Valley Airport in Medford Oregon. The office maintains 2 advanced meteorological response units (AMRS) with 2 laptop computers with modem for on-site support of wildfires. Fire weather forecasts and other products are disseminated to state and federal agencies through AWIPS (NWS Communications systems), WIMS and through our homepage.

The homepage address is: http://www.wrh.noaa.gov/mfr

HOURS

24 hours a day, year round
Meteorologists are on duty 24 hours a day, 7 days a week. Additional forecasters will be brought in to staff for additional projects, severe weather, etc. However, under the provisions of the National Fire Weather Agreement, special service provided by the Medford office will be done on a reimbursable basis.

PHONE NUMBERS

Primary Fire Weather.....541-776-4332
Secondary Fire Weather.....541-776-4326
Fax.....541-776-4333

STAFF

The Medford office is staffed with 13 full-time meteorologists. All forecasters participate in producing fire weather forecasts after each has completed the training, which includes correspondence course, computer-based Fire Weather Training Module, mesoscale analysis, climatological and terrain familiarization, and spot forecast training.

Management staff
- John Lovegrove, Meteorologist in Charge
- Dennis Gettman, Science and Operations Officer (IMET)
- Ryan Sandler, Warning and Coordination Meteorologist

Forecast staff

- Frederic Bunnag Senior Meteorologist / Fire Weather Program Leader (IMET)
- Michael Stavish Senior Meteorologist
- Michael O'Brien Senior Meteorologist
- Jim Reynolds Senior Meteorologist
- Jay Stockton Senior Meteorologist
- Mark Berteau Meteorologist
- Robert Cramp Meteorologist
- Rick Holtz Meteorologist
- Dan Mundell Meteorologist
- Sven Nelaimischkies Meteorologist
- Dan Weygand Meteorologist

FORECAST SERVICES

FIRE WEATHER AND LAND MANAGEMENT FORECASTS

The Land Management Forecast is issued during the off-season, usually from mid-October to around May. The forecast is available on the homepage once daily by 1500 local time. The frequency of the Land Management Forecast and the forecast elements may be increased as the fire season approaches. The Fire Weather Program manager will survey the user agencies throughout the off season to determine when extra forecasts are needed.

During the fire season, the Fire Weather Forecasts will be issued twice daily at 0730 and 1500 PDT. The forecast follows the national standard format introduced during the 2001 fire season. NFDRS zone trend forecasts for specific meteorological parameters are issued with the afternoon Fire Weather Forecast. When necessary, trend forecasts may be updated on the morning Fire Weather forecast on the following day.

The Medford Forecast Office will activate the Internet fire weather briefing around the middle of May and continue through the end of the fire season. The forecaster on duty will narrate the briefing and the briefing time will be determined according to agency needs. Every fire and land agency is encouraged to dial into the conference call and ask questions. The graphics for the briefing can be accessed via the Fire Weather Section of the homepage under the Fire Weather Briefing subsection. The dial-in phone number will be provided approximately one week before the briefing starts. Commencement time of this call will be coordinated with the fire agencies.

FIRE WEATHER WATCHES AND RED FLAG WARNINGS

Fire Weather Watches and Red Flag Warnings will be issued when the following weather criteria are expected, in conjunction with certain fuel situations.

Fuel Situations that must be met are:

- 1000 hour fuel moisture < 15%
- Live fuel moisture 120% or less
- Annuals are cured.

Weather Criteria that must be met are:

A. Thunderstorms with little or no precipitation.
Lightning occurrence must be at least scattered in coverage. Generally, rainfall should be less than 0.25 inch for the Cascades/Siskiyou Mtns and west side, and less than 0.10 inch for zones east of the Cascades.

B. Strong Winds with low humidity generally associated with the marine push or a dry cold front.

Zones 616 617 620 621 622 623.

- Min RH < 15% AND 10 minute sustained wind 10 mph

Zones 616 and 617.

- Emigrant RAW and Roseburg METAR (KRBG) reporting above conditions for 2 hours.
- These two zones are to be verified as a block.

Zone 620.

- Two key stations reporting above conditions for 2 hours.
  Key stations: Illinois Valley, Provolt, Onion and Merlin RAWS

- Sexton Summit METAR (KSXT) may also be used but winds must be adjusted to 10 minute average.

Zone 622.

- Two key stations reporting above conditions for 2 hours.
  Key stations: Evans Valley, Star and Buckhorn RAWS.

- Medford METAR (KMFR) may also be used but winds must be adjusted to 10 minute average.

Zones 621 and 623.

- Two key stations reporting above conditions for 2 hours.
  Key stations: Zim and Parker Mountains RAWS in Oregon, and Slater Butte and Crazy Peak RAWS in northern California.

- These two zones are to be verified as a block.

Zone 624.

- Min RH < 15% AND 10 minute sustained wind 15 mph.

- Two key stations reporting above conditions for 2 hours.
  Key stations: Calimus, Chiloquin, Coffee Pot, Gerber, Strawberry and Summit.

- Kingsley Field Metar (KLMT) may also be used but winds must be adjusted to 10 minute average.

Zone 625.

- Min RH < 10% AND 10 minute sustained wind 20 mph
- Min RH < 15% AND 10 minute sustained wind 25 mph
- Min RH < 20% AND 10 minute sustained wind 30 mph
- Two key stations reporting above conditions for 2 hours.
- Key stations: Fish Fin, Rock Creek, Catnip and Wagontire RAWS(Zone 636).

- Lakeview AWOS Metar (KLKV) may also be used but winds must be adjusted to 10 minute average.

C. Offshore East Wind Event resulting in strong winds and low relative humidity at night (2200 to 0600)

Zones 617.

- RH Recovery < 30% AND 10 minute sustained wind 10 mph.

- Sugarloaf RAW and Emigrant RAWS of zone 608 (Portland WFO) reporting the above conditions for 2 hours.

Zones 618.

- Redmound RAWS reporting RH Recovery < 25% AND 10 minute sustained wind 15 mph for 2 hours.

Zones 619 and 620.

- RH Recovery < 30% AND 10 minute sustained wind 15 mph.

Zone 620.

- Onion RAWS or Sexton Summit METAR (KSXT) reporting above conditions for 2 hours.

- METAR wind at KSXT must be adjusted to a 10-minute average value.

Zone 619.

- Quail Prairie or Bald Knob RAWS reporting above conditions for 2 hours.

- In case where neither of the above RAWS is reporting, the Red Flag Event is assumed to be occurring in zone 619 if zones on both sides of its border (618/620) are reporting Red Flag condition.

Zones 621, 622, 623.

- RH Recovery < 25% AND 10 minute sustained wind 10 mph.

- Two key stations reporting above conditions for 2 hours.
  Key stations: Evans Valley, Zim, Parker Mountain and Buckhorn.

- These three zones are to be verified as a block.

D. Very Dry and Unstable Airmass

- Haines Index forecast of 6 in conjunction with extremely dry fuel. Forecasters will coordinate with the fire agencies when Haines Index 6 is forecast, whether fuel conditions warrant the issuance of the Red Flag Warning.

All Red Flag Warnings will be coordinated with the affected agencies and neighboring fire weather offices, in order to assess fuel conditions and general fire danger, before the issuance of a Red Flag Warning. Each issuance, update or cancellation of a Fire Weather Watch or Red Flag Warning will also be relayed by telephone to the dispatch office(s) affected by the watch/warning.

SPOT FORECASTS

Spot forecasts are available year-round to federal land management agencies upon requests for wildfires, prescribed fires, spray projects and other land management activities. Spot forecasts are available to state forestry agencies and local fire departments for wildfire suppression only. Information required by the forecasters is found on WS Form D-1, items 1-12. Spot forecasts may be requested by filling out pertinent information in the Fire Weather Spot section of the Medford Weather Forecast Office homepage. They may also be requested using the WS Form D-1 with the information faxed to the Medford office or relayed by phone.

We strongly encourage the fire agencies to call this office after submitting a spot request to ensure it was received properly. Attempts will be made to notify field personnel when there is a significant change in the expected weather. However, spot forecasts will be updated only when new observations become available, and/or the update is requested by the users. The forecast will be valid for 12 hours after the proposed ignition time. Spot forecasts for wildfire suppression take precedence over normal office routines.

FIRE WEATHER ZONES

AREA 1...COAST (Zones 615 and 618)

This area extends from the Pacific Ocean to the foothills of the Coast Range, which rises to a crest of 2500 to 4500 feet, about 30 to 40 miles inland.

AREA 2...UMPQUA BASIN AND UMPQUA FOOTHILLS (Zones 616 and 617)

This area is located between the Coast Range and the crest of the Cascades mountains. The western portion of the area, mainly the Coast Range, varies in elevation between 2000 and 4500 feet, whereas the eastern portion rises to 4000 and 6000 feet with some peaks reaching as high as 8500 feet.

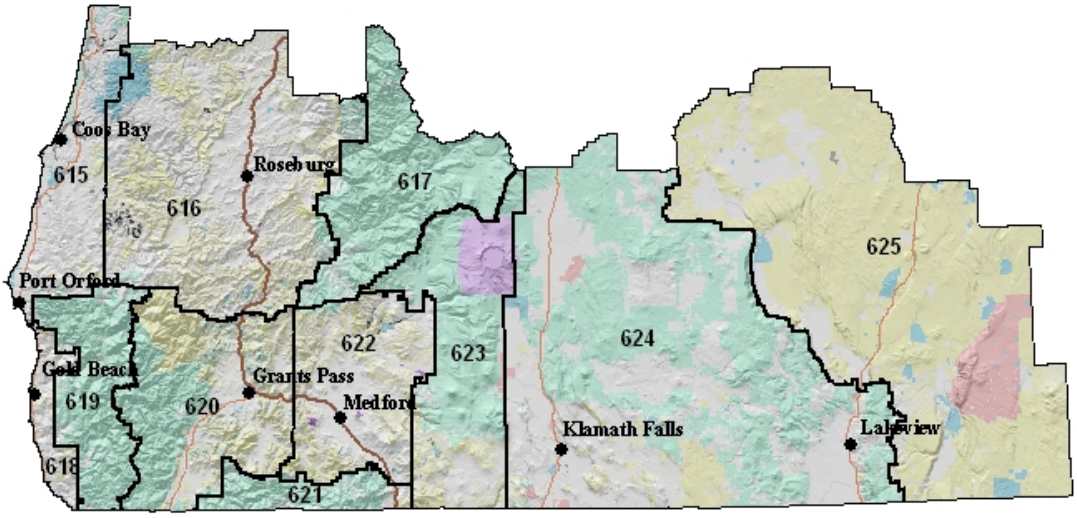
AREA 3...SOUTHWEST INTERIOR INCLUDING THE CASCADE AND THE SISKIYOU MOUNTAINS (Zones 619-623)

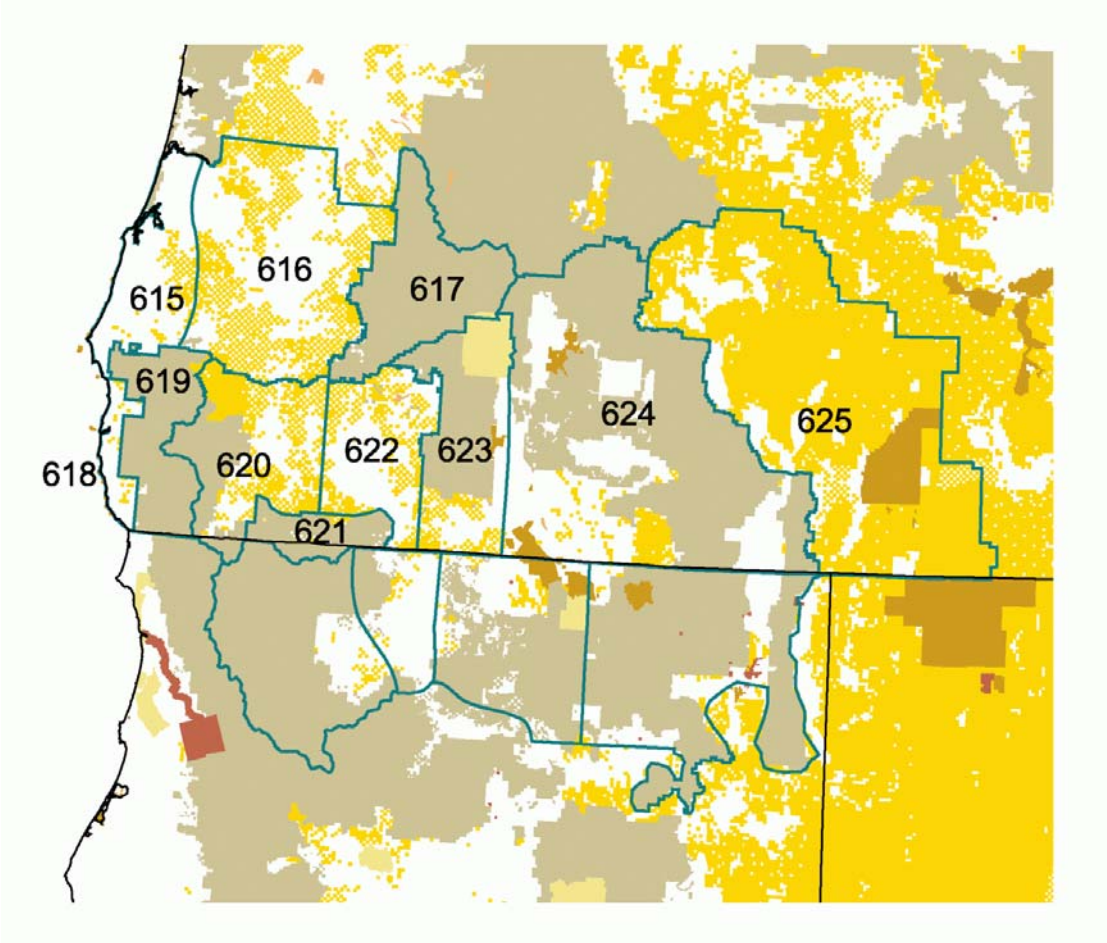
This area has complex terrain. The western boundary begins with the Coast Range, where elevations range from 3000 to 5000 feet. The area includes the Illinois Valley, the Siskiyou Mountain with peaks reaching as high as 7500 feet and the Rogue Basin. The area's eastern boundary includes the Cascade Mountains, where elevations can reach 6500 feet with a few peaks over 8000 feet high. Crater Lake is in the very northeast corner of this area.

AREA 4...EAST OF THE CASCADE MOUNTAIN (Zones 624 and 625)

This area extends from the eastern foothills of the Cascade Mountains, with the elevation around 5000 feet, across the Klamath Basin with the elevation around 4000 feet. To the

east of the Klamath Basin, this area includes a series of ridges, hills, then the Fremont Mountains and the Warner Valley on the northwest rim of the Great Basin. The eastern boundary of this area closely follows the border between Lake county and Harney county, and is representative of high plateaus with desert-like climate.


Coos Bay
Roseburg
615
616
617
625
Port Orford
622
623
624
Gold Beach
Grants Pass
619
620
Medford
Klamath Falls
Lakeview
618
621


616
615
617
619
624
625
618
620
622
623
621

2005

Spokane Fire Weather

Operating Plan

Spokane Fire Weather

LOCATION:

National Weather Service Office
2601 North Rambo Road
Spokane, WA 99224-9164.

HOURS:

Office hours at WFO Spokane for Fire Weather will be as follows: Daily 24 Hour forecast coverage.

The Fire Desk is staffed daily 0700-1500 Mid March - Early November

PHONE NUMBERS and E-Mail:

Fire Weather	(509) 244-5031
Public	(509) 244-6395
FAX	(509) 244-0554

john.livingston@noaa.gov
ken.holmes@noaa.gov
ronald.miller@noaa.gov
robert.tobin@noaa.gov

STAFF:

Name	Position
John Livingston	Meteorologist in Charge
Ron Miller	Science and Operation Officer
Ken Holmes	Warning Coordination Meteorologist
Bob Tobin	Fire Weather Program Leader/IMET
Todd Carter	ITO/Forecaster/IMET
Claudia Cox	Senior Forecaster
John Fox	Senior Forecaster
Robin Fox	Senior Forecaster
Matt Fugazzi	Senior Forecaster
Paul Bos	Forecaster
Tracy Cox	Forecaster
Laurie Koch	Forecaster
Rocco Pelatti	Forecaster/IMET
John Werner	Forecaster/IMET Trainee

COMMUNICATIONS:

All forecasts and spot forecasts are input into AWIPS (Advanced Weather Integrated Processing System), WIMS, and on Spokane's Internet home page. Users who do not have access to WIMS, or Internet can still have forecasts faxed to them.

Internet Address:

http://www.wrh.noaa.gov/otx/fire.php
http://www.wrh.noaa.gov/otx

WEATHER BRIEFINGS

Internet based weather briefings are available from the Spokane office as needed. During peak fire season, normally mid June-October briefings will be daily at 0915 PDT. During Land Management season briefings are available by customer request and are usually held twice per week for planning purposes. Phone briefings are available 24 hours per day.

FORECAST DISTRICT:

The Spokane Fire Weather Office has weather forecast responsibility for a large portion of protected lands in eastern Washington. Exceptions are the Blue Mountains area, the Yakama Indian Nation lands, the DOE Hanford Site, and Southeast Department of Natural Resources (DNR) land. These protected lands are the forecast responsibility of the National Weather Service Office Pendleton Fire Weather program.

Spokane Fire Weather's area of responsibility for Eastern Washington is divided into six districts for fire weather forecasting. In addition, these forecast districts are further sub-divided into ten fire weather zones. See the map for general locations of districts and zones for eastern Washington. The weather zones are comprised of fire danger stations with similar weather and similar trends in weather changes.

WFO Spokane has forecast responsibility for Central and Northern Idaho Panhandle. This district has one (1) zone (101) covering the Idaho Panhandle National Forests, Idaho State Lands, and Coeur d'Alene Indian Agency lands.

Agencies Served:

Land management agencies served by the Spokane Fire Weather Office include:

USFS....	Colville NF
	Wenatchee NF
	Okanagan NF

	Idaho Panhandle NF
BLM....	Spokane District
BIA....	Colville Indian Agency Spokane Indian Agency Coeur d' Alene Indian Agency
NWR...	Turnbull National Wildlife Refuge Columbia National Wildlife Refuge Priest River National Wildlife Refuge Lake Pend Oreille Wildlife Refuge
Washington DNR...	Northeast Area Resource Protection Division
Idaho...	Department of State Lands
Other Public Agencies...	Coulee Dam National Recreation Area Lake Chelan National Recreation Area

FORECAST SERVICES:

Planning Forecasts

The issuance of planning forecasts are seasonal. Routine issuance of the morning and afternoon planning forecasts seven days a week normally begins in early spring. For 2005 it will be around Monday March 21st continuing through late October or early November. Specific start and stop dates are coordinated with customer agencies. Morning forecasts will be available at 08:30 a.m., while afternoon forecasts will be available by 3:30 p.m.

Off-season Land management forecasts will be issued between 0900-1000 Monday through Friday through the winter months. These forecasts will begin the Monday following the end of fire season, typically late October or early November.

Fire Weather Watches and Red Flag Warnings

General Fire Weather Watch and Red Flag Warning criteria continues to be under review. Until formal changes have been agreed upon by the Land Management agencies and the National Weather Service we will continue with the present criteria. Red Flag criteria for eastern Washington and Northern Idaho are as follows:

- Dry lightning and thunderstorms producing little or no precipitation (less than .10 of an inch)

- Lightning after an extended period of dry. An extended period of dry will be at the discression of the NWS, but typically is thought of as 14 or more consecutive days without measurable precipitation.

- Sustained surface winds exceeding a 10 minute average of 15 mph combined with relative humidity less than:

    - 15% in the Columbia Basin (zone 673)
    - 25% in the mountainous areas
    - 20% in the lower valley zones

    These conditions must be verified by at least 2 observation sites (RAWS, METAR, DOT, Agrimet etc) for 2 consecutive hours. **For Idaho Zone 101 the criteria will be at least 2 observations sites for any 3 hours in an 8 hour period.** When using observation sites other than RAWS sites wind speeds will be converted to 10 minute averages.

    Special consideration will be given whenever very hot temperatures are combined with very low relative humidity.

- Haines Index of 6 when combined with low relative humidity, typically 15% or below.

The issuance of Red Flag Warnings will take into account fuel conditions, and will be coordinated with land management agencies and other applicable fire weather offices. Typically when 1000 hour fuels are at or below 12% and 100 hour fuels are at or below 10% and Live Fuels at or below 120%. In 2005 the NWSFO Spokane will be utilizing the NWCC dryness levels as input into the decision making process for issuing fire weather watches and red flag warnings.

Red Flag Warning Verification Points

Zone 673

- Douglas Raws, Escure Raws, Saddle Mountain Raws

Zone 676-677

- Camp Four Raws , Dry Creek Raws , Entiat Raws

Zone 686 Spokane County portion

- Wellpinit Raws , Midnight Mine Raws, TurnBull Wildlife Refuge Raws

Zones 680, 682, 685

- NCSB , Raws, Leecher Raws , Signal Peak Raws, Peoh Point Raws

Zone 684

- Nespelem Raws , Kramer Raws , Douglas Ingram Raws , Oroville Raws…*****If Kramer Raws and Oroville Raws are used to meet red flag conditions at least one other RAWS in the fire zone will need to meet the criteria for at least one hour*****

Zones 686-687

- Kettle Falls Raws , Midnite Mine Raws , Gold Mountain Raws, Deer Mt. Raws

Zone 101

- Bonners Ferry Raws, Clarkia Raws, Fish Hook Raws Hayden lake Raws , Line Creek Raws , Nuckols Raws Priest lake Raws , Saddle Pass Raws

*****For Idaho Zone 101 the criteria will be at least 2 observations sites for any 3 hours in an 8 hour period.*****

Spot Forecasts

Official spot forecasts will be prepared and disseminated 24 hours a day. All prescribed fire spot forecast requests MUST BE accompanied by a recent weather observation from the burn site. **More observations from the burn area will generally result in better spot forecasts.** Feedback is imperative to increase the accuracy of spot forecasts. **In addition valid times for spot forecasts will be twelve hours from issuance**. If a fire has a longer duration, a new spot forecast should be requested.

"Spot forecasts are available year-round to all Federal, State and Local government entities for wildfire suppression, prescribed burns (for hazardous fuel reduction), search and rescue missions, HAZMAT incidents, or for any other land management activity that directly supports federal resources or the safety of civilians and forests. Spot forecasts cannot be provided to Local and State governments for non-fire/range management activities such as spray projects, road building, tree planting, recreational events, and prescribed burns (other than for hazardous fuel reduction) that do not have the potential to escape and threaten life and property."

NFDRS Trend Forecasts

A numerical zone trend forecast is prepared and disseminated to WIMS by 1540 each afternoon from about late May through early October. The trend forecasts are used to compute the expected NFDRS indices valid for the following day. The number of NFDRS indices forecast by the weather office depends only on the number of NFDRS

observations input into WIMS by the fire agencies. If observations are not entered into WIMS by 1500, a forecast will not be produced for the zone(s).

IMETS (Incident Meteorologists)

Spokane Fire Weather Office will have a minimum of two certified IMET'S on staff with at least one available at all times during the high summer fire season.

NON-FORECAST SERVICES:

There are several duties that fall into the non-forecast services including, but not limited to teaching assignments, customer meetings, customer consultations, preparation of annual reports, preparation of annual operating plans, program management, research and in-house training of personnel.

There is a need for advanced notice for teaching assignments, customer meetings and consultations. The NWS-NWSEO Collective Bargaining Agreement provides rules for scheduling of bargaining unit employees. NWS management has limitations regarding modification of the work schedule after it has become "fixed" without paying overtime.

All requests for teaching assignments, customers meetings and consultations will be honored provided they are scheduled more than three weeks ahead of time, and they do not conflict with other Fire Weather commitments. NWS Spokane will make every effort to fulfill requests for teaching assignments, customer meetings and consultations that are scheduled with less than three weeks lead time, or conflict with other Fire Weather commitments. Shifts will be scheduled to complete the Annual Operating Plan and other Fire Weather commitments. NWS Spokane will make every effort to fulfill requests for teaching assignments, customer meetings and consultations that are scheduled with less than three weeks lead time, or conflict with other Fire Weather commitments. Shifts will be scheduled to complete the Annual Fire Weather Operating Plan and the Annual Fire Weather Report. Program management, research and training time will be provided to ALL employees based on the needs of the office.

Fire Weather Program Leader - The NWS Spokane Fire Weather Program Leader is Bob Tobin. High primary focus will be customer outreach, training, program development, IMET dispatches, and fire weather operational shifts.

Meeting Proficiency and Currency Standards - All forecasters will complete required proficiency prior to working alone on any real time Fire Weather products and services.

FORECAST VERIFICATION

Routine verification will be made on Red Flag Warnings and Spot Forecast turnaround times. In addition selected NFDRS trend forecasts for temperature, relative humidity, and fuel moisture will be verified. Results of the verification will be published in the Fire

Weather Annual Summary. The National Weather Service will work with local fire agencies and the Pacific Northwest Coordination Group to develop a baseline for product verification.

Geographical Area Descriptions

The National Weather Service Office in Spokane has fire weather forecast responsibility for the mountains and valley areas of northern and central eastern Washington and the northern and central Idaho Panhandle. The Pendleton weather office assumes responsibility for the southern areas of eastern Washington.

The National Weather Service Office in Spokane has fire weather forecast responsibility for protected lands in the northern and central part of eastern Washington. Exceptions are the Blue Mountains area, the Yakama Indian Reservation, and the Southeast Department of Natural Resources (DNR) protected lands. Forecasts for these areas are handled out of the National Weather Service office in Pendleton (see zone descriptions below).

WFO Spokane's eastern Washington fire weather area is divided into six districts. In addition, these forecast districts are further sub-divided into ten fire weather zones. See the map for general locations of districts and zones for eastern Washington. The fire weather zones are comprised of fire danger stations with similar weather and similar trends in weather changes.

South Central District:

This district consists of two zones. Zone 676 lower elevations and Zone 680 higher elevations. The south central district covers those areas of the southern Washington Cascades north of the Yakama Indian Reservation to Mission Ridge. The district boundary also runs west to east from the Cascade crest to Interstate 82. This includes the Naches and Cle Elum Ranger Districts of the Wenatchee National Forest. This district has pronounced climate differences, from the marine air influence near the Cascade crest, to the dry arid climate of the valleys. This district has a relatively low frequency of lightning, and averages about 7-10 storm-days per season from June through September.

Central District:

This district has two zones. Zone 677 lower elevations and Zone 682 are the two zones in this district. This district extends from Mission Ridge north to the Sawtooth Ridge, and from the Cascade crest east to the Columbia River. It includes the northern part of the Wenatchee NF. Lightning frequency averages around 10-15 storm-days per season. The summer climate is similar to the South Central District, but winds tend to be stronger and more persistent, and day to day weather changes are more pronounced. This district contains some of the highest fire hazard areas in the Pacific Northwest.

Northern District:

This district has three zones. Zone 687 is the Okanogan Highland zone. Zone 684 lower elevations, mainly the Okanogan River Valley, and zone 685 higher elevations of the North Cascades. This district extends across the north part of eastern Washington from the Cascade crest to the Kettle River Ranger District on the east. It includes the Okanogan NF, the Republic Ranger district of the Colville NF, land under the protection of Northeast Department of Natural Resources, and the western and central parts of the Colville Indian Agency. The marine influence is minimal in this district compared to the south central and central districts due to its more continental location. Winds are generally lighter than central and south central districts. Lightning activity though is greater, averaging about 15 storm-days per season.

Northeast District:

Zone 686. The northeast district extends from Kettle River to the Idaho border, and south to the vicinity of Spokane. It covers the remainder of the Colville NF and Indian Agency, as well as lands under the Northeast DNR. This district is normally more moist than the other districts since it extends into the western foothills of the Rocky Mountains. The southern portion around Spokane is the drier, windier section of this district. Lightning frequency is the greatest of any of the districts averaging 15-20 storm-days per season.

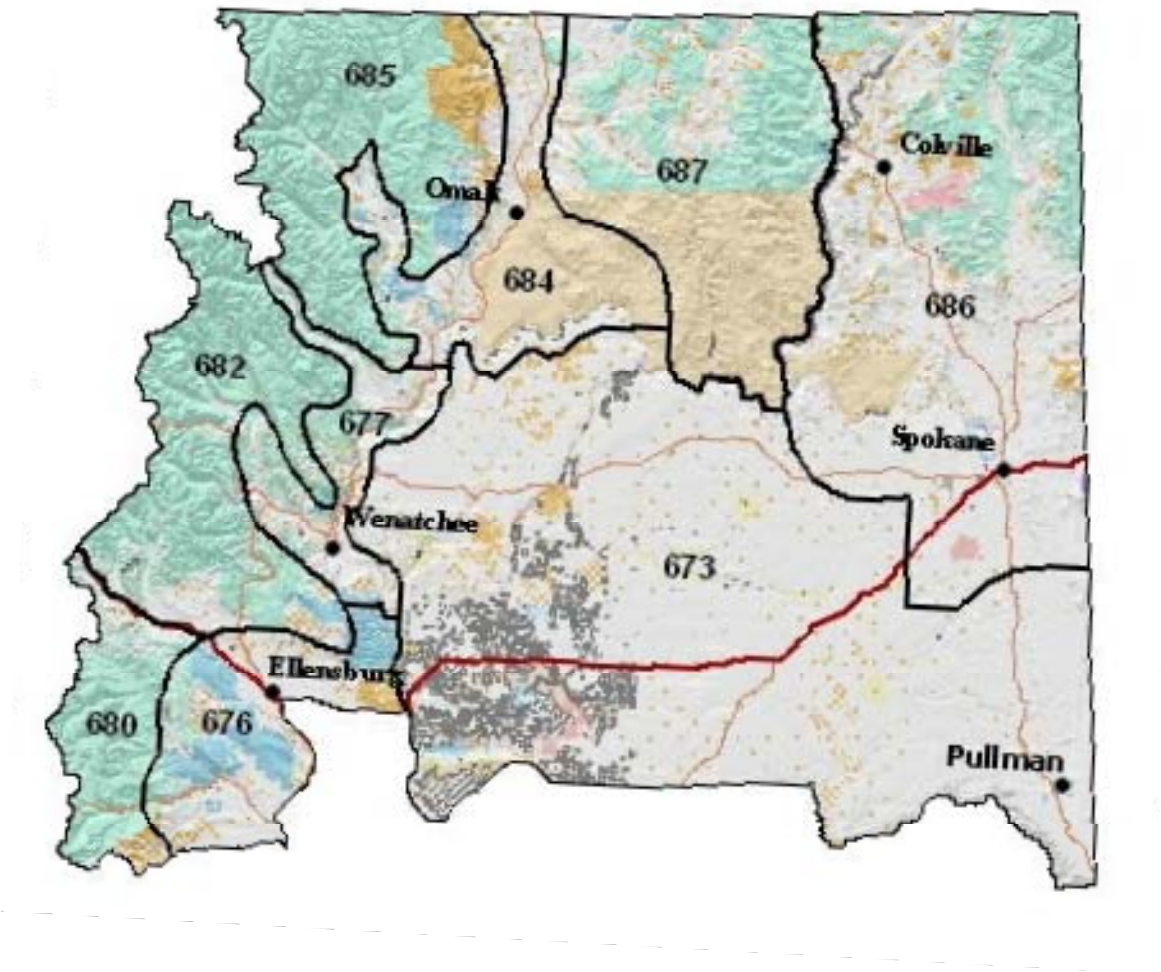
Northern Columbia Basin District:

Has one zone. Zone 673. Pendleton weather office has responsibility for all Washington State DNR Southeast Region lands, Yakama IA, and DOE Hanford. The southern boundary is I-90 for that part of the Yakima Firing Center in Kittitas County then follows county lines west to east across Grant, Adams, and Whitman Counties. The western part of the district boundary is the Columbia River at the Grant County line. The northern boundary is the same as previous years following the Columbia River to the eastern Ferry County then south across the northeast part of Lincoln County to I-2 near Davenport then east to the Spokane County line. Fuels in this district consist of mainly grass and sage. Zone 673 includes the Waterville Plateau which contains low ridges and coulees'. Most of the district is at fairly low elevations between 900 and 3,000 ft...with the exception being Badger Mountain near Waterville at 4,221 feet. Due to the relatively low elevations and locations, this is the warmest and driest district. Winds in some areas can be very strong. Lightning activity is the least of the districts, averaging about 6 storm-days per season.

Northern and Central Idaho Panhandle District:

This District is part of Region 1 and has one zone. Northern and Central Idaho Panhandle Zone 101 - Northern and Central Idaho Panhandle. This zone includes...Idaho Panhandle National Forests. Coeur d'Alene Indian Agency lands, and Idaho State protected lands in the following counties: Boundary, Bonner, Kootenai, Benewah,

Shoshone, and the northern part of Latah county, where a part of the St. Joe District resides. Zone 101 is broken into three (3) separate zones the Northern zone, Central zone and Southern zone. This area averages 12-15 thunderstorm days per season.



Spokane Fire Weather forecast zones in Washington

2005

Pendleton Fire Weather

Operating Plan

PENDLETON FIRE WEATHER OPERATIONS PLAN 2005

LOCATION:

National Weather Service Office
2001 NW 56th Dr.
Pendleton, OR 97801.

NEW FOR 2005

Zone 609 will be extended north across the Columbia River to include the western portion of Klickitat County west of Highway 97 affective April 1st 2005. The eastern Columbia River Gorge will be included in zone 609. See zone geographical description at the end of this operating plan for more detail of new zone boundary.

Red flag warning criteria for wind and low RH in zone 609 has been changed to take into account the increased winds associated with the Columbia River Gorge. See details in operating plan under Fire Weather Watches and Red Flag Warning criteria.

Red flag Warnings for poor RH recovery overnight will no longer be issued. Instead, whenever poor RH recover is expected it will be headlined in the zones.

HOURS:

The Pendleton Fire Weather Program is committed to establishing a program with staffed trained to respond to fire weather needs 24 hours per day. In addition a Fire Weather shift will be scheduled during the following times:

Land Management Season

7:00 AM - 4:00 PM 5 days a week.
Normally late March - early June and late September - October.

Fire Season

7:00 AM - 4:00 PM 7 days a week
Normally early June to late September.

The National Weather Service office in Pendleton is open 24 hours a day , 7 day a week and is fully staffed. If there is a need to support a project, additional forecasters can be made available. However, under the provisions of the National Agencies/NWS Agreement (see appendix A), special services provided by the Pendleton Fire Weather office will be done on a reimbursable basis.

PHONE NUMBERS

Fire Weather Desk	(541) 276-8134
General	(541) 276-4493
Fax	(541) 276-8253

INTERNET ADDRESS and E-MAIL:

http://newweb.wrh.noaa.gov/pdt

mike.vescio@noaa.gov	Meteorologist-in-Charge
dennis.hull@noaa.gov	Warning Coordinator Meteorologist
joe.solomon@noaa.gov	Fire Weather Program Manager

STAFF

Name	Position
Mike Vescio	Meteorologist-in-Charge
Dennis Hull	Warning Coordination Meteorologist
Jon Mittelstadt	Science and Operation Officer

All Senior and Journeyman Forecasters will train and be certified to issue all forecast from the Fire Weather desk. However a core group of forecasters will provide the majority of forecasts during fire season.

Name	Position
Joe Solomon	Fire Weather Program Leader / Senior Forecaster / IMET
Mary Smith	Senior Forecaster
Roger Cloutier	Senior Forecaster
Vincent Papol	Senior Forecaster
Zaaron Allen	Senior Forecaster
Jeremy Wolf	Journeyman Forecaster / IMET
Gordon Hepburn	Journeyman Forecaster
Diann Coonfield	Journeyman Forecaster
Cynthia Palmer	Journeyman Forecaster
Alan Polan	Journeyman Forecaster
Mike Cantin	Journeyman Forecaster

COMMUNICATIONS

All forecasts including spot forecasts are input into the National Weather Service communication system, WIMS and on Pendleton's Internet home page. Forecasts can also be faxed to customers who do not have access to these systems. Internet address is: http://newweb.wrh.noaa.gov/pdt

WEATHER BRIEFINGS

Internet based weather briefings usually begin in May. During Land Management season briefings will be held Monday and Thursday. During peak fire season, normally mid June-September briefings will be daily at 0930 PDT. Phone briefings are available 24 hours per day.

AGENCIES SERVED

USFS: United States Forest Service
BLM: Bureau of Land Management
NPS: National Park Service
BIA: Bureau of Indian Affairs
USF&W: United States Fish and Wildlife
ODF: Oregon Department of Forestry
DNR: Southeast Washington Area
County and Local Fire Jurisdictions in southeast Washington, central and northeast Oregon.

FORECAST SERVICES

Land Management and Fire Weather Planning Forecasts:

Routine land management planning forecasts are issued seasonally in the early and late part of the burning season. They are available twice a day Monday through Friday at 0900 and 1530 PDT. Specific start and stop dates are coordinated with customer agencies. Routine fire weather planning forecasts are available twice daily during the heart of the fire season, usually from early June through late September. They will be issued at 0900 and 1530 PDT. Offseason land management forecast area issued during the winter at 0900 PDT.

Spot forecasts/Special request Forecasts:

Spot forecast are available year round for wildfires, prescribed fires, or any other critical land management activities conducted by ALL land management agencies. The NWS will support non-federal, non-wildfire activities such as HAZMAT and search and rescue. We are urging land managers to customize spot forecast requests for the parameters that are needed and provide critical weather thresholds that may adversely impact the burn,

such as wind, relative humidity, or burn period. This will allow the forecaster to concentrate on the specific data and time line needed rather than a host of parameters that may be of little interest. Spot forecasts take precedence over normal office duties. **As implemented in 2003, the Region 6 National Weather Service offices will: require at least one observation from the fire site for prescribed spot requests. In addition valid times for spot forecasts will be 12 hours from issuance.**

Information required by the fire weather forecaster from the requesting agency is found on WS form D-1, items 1-12. A spot forecast for a planned ignition the next day may allow us to provide you with more lead time before the planned prescribed burn. Feedback of how well the forecast verified is extremely valuable in order to provide more accurate subsequent forecasts. As such the forecasters in Pendleton request all observations taken from the burn site be sent to our office. This may be accomplished through FAX or electronically. Spot forecast requests will be accepted either, electronically via our internet web site: http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=pdt or by fax at (541) 276-8253. Phone consultations are available 24 hours a day.

NFDRS Trend Forecasts

A numerical zone trend forecast is prepared and disseminated to WIMS by 1540 each afternoon from about late May through early October. In addition, two "point" forecasts are also prepared for Haystack and Fall Mountain RAWS. The trend forecasts are used to compute the expected NFDRS indices valid for the following day. The number of NFDRS indices forecast by the weather office depends only on the number of NFDRS observations input into WIMS by the fire agencies. If observations are not entered into WIMS by 1500, a forecast will not be produced for the zone(s).

Incident Meteorologist Services

Pendleton has two certified Incident Meteorologists (IMETS) on staff available for wildfire, HAZMAT, or other emergency dispatches. To request an IMET, contact the appropriate fire agency dispatch office.

NON-FORECAST SERVICES

There are several duties that fall into the non-forecast services, including but not limited to teaching assignments, customer meetings, customer consultations, preparation of annual reports, preparation of annual operating plans, program management, research and in-house training of personnel.

There is a need for advanced notice (3 weeks) for teaching assignments, customer meetings and consultations. The NWS-NWSEO Negotiated Agreement provides rules for

scheduling of bargaining unit employees. NWS management has limitations regarding modification of the work schedule after it has become fixed without paying overtime.

All requests for teaching assignments, customers meetings and customer consultations will be honored provided they are scheduled more than three weeks ahead of time, and they do not conflict with other Fire Weather commitments. NWS Pendleton will make every effort to fulfill requests for teaching assignments, customer meetings and consultations that are scheduled with less than three weeks lead time, or conflict with other Fire Weather commitments. For training requests, please contact Joe Solomon at NWFO Pendleton (541) 276-8134 or by e-mail joe.solomon@noaa.gov

FIRE WEATHER WATCHES AND RED FLAG WARNINGS:

Please refer to the Glossary for the formal definitions of Fire Weather Watches and Red Flag Warning events. Specific Red Flag criteria differ for each situation and district. The following are criteria which would warrant a Fire Weather Watch/Red Flag Warning in the Pendleton Fire Weather District:

Criteria:

Any or a combination of the following combined with very dry fuels are criteria for the issuance of a Fire Weather Watch or a Red Flag Warning depending on the lead time:

- Dry Lightning (scattered coverage and LAL of 6) - Thunderstorms producing less than .10 of an inch of precipitation and RH < 20% OR fuels remain dry or critical after a lightning event.

- Any lightning (wet or dry) after an extended dry period or low fuel moistures (as defined at the bottom of Table A).

- Haines Index of 6 in combination with RH of 15% or less.

- Strong winds combined with low relative humidity which meet the criteria listed below:

  Zones (630, 631, 632, 633, 634, 635, 638, 675 & 681) for two hours at two locations (determined by the RH/WIND in Table A shown below)

  Zone 630 south of the Maury Mountains – the criteria will be wind 20 mph or greater and relative humidity of 10% or less.

  Zone 609: criteria is at least TWO RAWS reporting RH 20% or less AND wind speed 10 mph or greater for 2 hours.

  Zone 610: criteria is TWO stations for multiple hours in either scenario A or B below:

A) HeHe Butte RAWS and Haystack RAWS reporting RH of 15 percent or less AND wind speed of 10 mph or greater for 4 hours in a 9-hour block (afternoon and evening) OR

B) HeHe Butte RAWS OR Haystack RAWS reporting RH of 15 percent or less AND wind speed of 10 mph or more for 4 hours in a 9-hour block (afternoon and evening) AND one other RAWS reporting the same for two hours.

Zone 611: criteria is any TWO stations (including Timothy RAWS) reporting RH of 15 percent or less AND wind speed of 10 mph or greater for at least TWO hours

Table A. National Weather Service Pendleton Wind vs RH Red Flag/Fire Weather Watch Criteria Table

Note: This is only one element in determining the necessity for a Red Flag Warning or Fire Weather Watch and shall not be the solitary justification.

Columbia Basin ZONES 631 & 675

SUSTAINED 2O FT WIND OVER WIDESPREAD AREA

(10 MINUTE AVERAGE in MPH)

		5	10	15	20	25	30
	30						W
	25					W	W
RH(%)	20				W	W	W
	15			W	W	W	W
	10			W	W	W	W

The Central and Northeast Mountains ZONES 630...632-635...638 AND ZONE 681

SUSTAINED 2O FT WIND OVER WIDESPREAD AREA

(10 MINUTE AVERAGE in MPH)

		10	15	20	25	30	35
	30						
	25					W	W
RH(%)	20			W	W	W	W
	15			W	W	W	W
	10		W	W	W	W	W

A Red Flag Warning or Fire Weather Watch may be issued if the wind and humidity fall within the warn section of Table A and fuels, both live and dead are dry.

1. The forecaster is required to check with fire/land management agencies to ensure that fuels are dry enough to support large fire potential.

2. 1000 Hr fuel moisture less than 12% and 100 Hr fuel moisture less than 10%

3. Also refer to GACC "Dryness Level" for additional fuel moisture evaluation.

Red Flag Warning Dissemination:

Red Flag Warnings and Fire Weather Watches shall be issued using the Red Flag Statement (RFW) and will be headlined in the routine Fire Weather Forecast. All Red Flag Warnings and Fire Weather Watches will be cancelled using the Red Flag Statement (RFW) and the Fire Weather Forecast will include a headline stating such.

All Red Flag Warnings will be disseminated utilizing the National Warning System (NAWAS) network

All issuances of Red Flag events will be coordinated beforehand with the agencies included in the watch/warning area and with adjacent fire weather offices if the watch/warning is for a zone on a common district boundary. In order to rapidly disseminate Fire Weather Watches/Red Flag Warnings or other information of rapidly changing or hazardous weather conditions that do not meet Red Flag criteria, but will affect fire control or pose a safety threat a priority calling list has been established. NWFO Pendleton will contact the following dispatch office who will provide the appropriate agency notification. If the primary dispatch office is not available, the backup dispatch office may be requested to conduct the notification.

Primary Phone Number:	541-278-3732	Umatilla Dispatch
First Backup:	541-963-7171	NE Oregon Dispatch
Second Backup:	541-575-1321	Malheur Dispatch
Third Backup:	541-416-6800	Central Oregon Dispatch

USER AGENCY RESPONSIBILITIES

There are several responsibilities of the user agencies including:

- 1300 PST NFDRS observations.

- Site observations for Spot forecast requests. A representative observation from the burn site is required for all prescribed fire spot forecast requests.
- Quality Control of RAWS observations
- Timely maintenance of RAWS sites.

FORECAST VERIFICATION

Routine verification will be made on Red Flag Warnings and Spot Forecast turnaround times. In addition selected NFDRS trend forecasts for temperature, relative humidity, and fuel moisture will be verified. Results of the verification will be published in the Fire Weather Annual Summary. The National Weather Service will work with local fire agencies and the Pacific Northwest Coordination Group to develop a baseline for product verification.

FIRE WEATHER FORECASTER PROFICIENCY & CURRENCY STANDARDS

The National Weather Service proficiency standards for service to the fire weather users are shown in Appendix A. The National Weather Service and the Pacific Northwest Wildfire Coordination Group will review the progress in meeting the standards. Prior to each fire season, the Annual Operating Plan will provide a list of currently qualified forecasters and those expected to be qualified at each weather Forecast office who will be providing fire weather services during the upcoming year.

FORECAST DISTRICT

The Pendleton Fire Weather District currently covers the east slopes of the Cascades mountain range from the Deschutes National Forest to the alpine reaches of the Yakama Indian Reservation, central Oregon, the northeast quadrant of Oregon (including Baker county and Harney county north of highway 20), and Southeast Washington (Benton, Franklin, Klickitat, Yakima Walla Walla, Columbia, Garfield and Asotin counties). New this year is the extension of zone 609 north back into the western half of Klickitat County. Please see the district map for specific outlines of the Fire Weather Zones.

GEOGRAPHICAL AREA DESCRIPTIONS

The Pendleton Fire Weather forecast will be sectioned by Fire Weather Zone. This will result in 12 separate zone forecasts. These zones are based on terrain, elevation, weather characteristics, and political boundaries. The following are descriptions of each of the twelve Fire Weather Zones in the Pendleton Fire Weather district.

East Slopes of North Oregon & Southern Washington Cascades – Fire Weather Zone 609

Represents the portion the east slopes of the Cascades from Mt Hood NF to western Klickitat County as well as adjacent foothills under ODF & WA DNR protection.

Bounded by the Cascade crest on the west, the Yakima County line on the north and the northern boundary of the Warm Spring Indian Reservation on the south. The eastern boundary lies along Highway 97 from Satus Pass south to Biggs, OR, then runs west along the Columbia River to The Dalles, then follows Highway 197 south to near Maupin then roughly follows Wapinita Road to the northern border of the Warm Springs Indian Reservation boundary.

This zone has elevations that range from the peaks of Mt Hood (11000 feet) down to the eastern Columbia River Gorge (200 feet) and includes the Foothills of the Cascades.

East Slopes of Central Oregon Cascades - Fire Weather Zone 610

Represents Warm Springs Indian Reservation and the Sisters RD of the Deschutes NF.

Bounded by the Cascade crest on the west and the boundaries of Warm Springs Reservation and Sisters RD on the north, east and south.

This zone has elevations that range from the crest of the Cascades (10000 feet) down to the Foothills of the Cascades (2000 feet).

Deschutes NF (minus Sisters RD) - Fire Weather Zone 611

Includes the Deschutes NF with the exception of the Sisters RD…includes interior islands of private land and high Cascade wilderness areas.

Bounded on the west by Cascade crest...on the north by the southern boundary of the Sisters RD...and on the east and south by the Deschutes Forest boundary.

This zone has elevations that range from the crest of the Cascades (1000 feet) down to the high plateau deserts (4000 feet).

Central Oregon Mountains - Fire Weather Zone 630

Represents the Ochoco NF, Crooked River National Grasslands, Prineville ODF, Prineville BLM of Central Oregon.

Bounded on the west by the borders of the Deschutes NF and Warm Springs Indian Reservation. North boundary runs west to east from the northeast section of the Warm Springs Indian Reservation to north central Wheeler County. Southern boundary roughly follows the southern border of Deschutes County east of the Deschutes NF and includes

the extreme northeast portion of Lake County around Glass Butte. The west boundary roughly follows the east border of Crook County then cuts west across southern Wheeler County just north of the northern Crook County border then turning north again in western Wheeler County meeting the northern border in north central Wheeler County.

This zone covers the mountains of central Oregon including the grasslands and high plateau deserts. Elevations range from 2500 feet in the Grasslands to 7000 foot peaks in the Ochoco NF.

Columbia Basin of Oregon and Southeast Washington - Fire Weather Zone 631

Represents the Lower Columbia Basin of Oregon and Washington. Includes the Foothills of the Blue Mountains. Agencies responsible for fire protection in this area are ODF Pendleton, ODF The Dalles, Prineville BLM, Spokane BLM, Vale BLM, and southeast DNR.

West boundary is the Columbia River Gorge. South boundary follows the Foothills of the Blue Mountains from north central Oregon into southeast Washington. North boundary follows the Horse Heaven Hills through southern Benton County of Washington then turns north following the Columbia River to the east border of the Hanford Reach national Monument. Then it runs east along the northern borders of Franklin, Columbia, Garfield and Asotin Counties of Washington.

This zone covers the flat or smooth rolling hills in the Lower Columbia Basin of Northeast Oregon and Southeast Washington. Elevations range from about 200 ft MSL along the Columbia River to approximately 3000 ft MSL along the foothills of the Blue Mountains.

Southern Blue and Strawberry Mountains - Fire Weather Zone 632

Represents the Southern Blue Mountains in the Ukiah region down to the Strawberry Mountains in southern Grant County and northern Harney County. Agencies responsible are the ODF John Day, ODF Fossil, the Malheur National Forest, the Ochoco National Forest, Burns BLM, and Prineville BLM.

The west boundary follows the east boundary of zone 630 from north central Wheeler County down the eastern Crook County border then Down the west Harney County line to Highway 20. The southern border follows Highway 20 through Burns to the Malheur County line. The east border runs north roughly following the eastern Grant County border and the western border of Union County to near Ukiah. The north boundary runs

along the Foothills of the Blue Mountains from north central Wheeler County through southern Umatilla County.

This zone is composed of varying and complex terrain, ranging from mountains with numerous steep sloped and narrow drainages to flat plateaus, meadows, and river valleys. Elevations range from about 3200 ft MSL in the John day valley to over 8500 ft MSL in the Strawberry mountains

Northern Blue Mountains - Fire Weather Zone 633

Represents the Elkhorn and Blue Mountains as well as the Grande Ronde Valley. Agencies responsible are the ODF Baker City, the Umatilla National Forest, the Wallowa Whitman National Forest, the Malheur National Forest, and Vale BLM.

The west boundary starts at Highway 26 and runs north along the Grant and Baker County line. Then follows the Union and Umatilla County line north until reaching the Blue Mountain foothills around Pendleton. The it follows the Foothills into southeast Washington around the northern tip of the Blue Mountains which includes the souterhn portions of Columbia and Garfield Counties. The it runs south along the east boundary of the Umatilla NF to the northern tip of the Grande Ronde Valley. Then it runs down the east side of the valley until it hits the north border of Baker County. From there it jogs around the Elkhorn mountains ending up back at Highway 26.

Terrain in this area is highly variable and complex, ranging from mountains with steep slopes and narrow canyons to flat plateaus, meadows, and river valleys. Elevations range from below 2500 ft MSL in the Grande Ronde valley to near 9000 ft MSL in the Elkhorn mountains .

Eagle Cap District - Fire Weather Zone 634

This area is entirely within the Wallowa mountains and the majority of Eagle Cap Wilderness area. Terrain in this area is very complex with high mountains and numerous very steep slopes and narrow drainages. Elevations range from below 3500 ft MSL to near 10,000 ft MSL. The agency chiefly responsible is the Wallowa Whitman National Forest.

Wallowa District - Fire Weather Zone 635

This represents the County of Wallowa minus the Wallowa Mountains. Agencies responsible are the ODF Baker City, ODF Wallowa, the Wallowa Whitman National Forest, and Vale BLM.

This zone contains highly variable terrain as well, ranging from mountains with steep, narrow drainages to the deep canyons of the Snake and Imnaha river, to open, flat Wallowa Valley. Elevations range from near 2000 ft MSL to near 6500 ft MSL.

Baker Valley - Fire Weather Zone 638

This represents most of Baker County except for the Elkhorn Mountains in northwest Baker County. Agencies responsible are the ODF Baker City, the Wallowa Whitman NF and Vale BLM.

This zone contains highly variable terrain as well, ranging from mountains with steep, narrow drainages to the deep canyons of the Snake , to open, flat Baker Valley. Elevations range from near 3500 ft MSL to near 6000 ft MSL

Eastern Washington Southern Columbia Basin - Fire Weather Zone 675

This represents Columbia Basin west of the Columbia River to the Foothills of the east slopes of the southern Washington Cascades. Agencies responsible for fire protection in this area are the Yakama BIA, Hanford Fire, Southeast DNR, Spokane BLM, Benton County Fire, Franklin County Fire

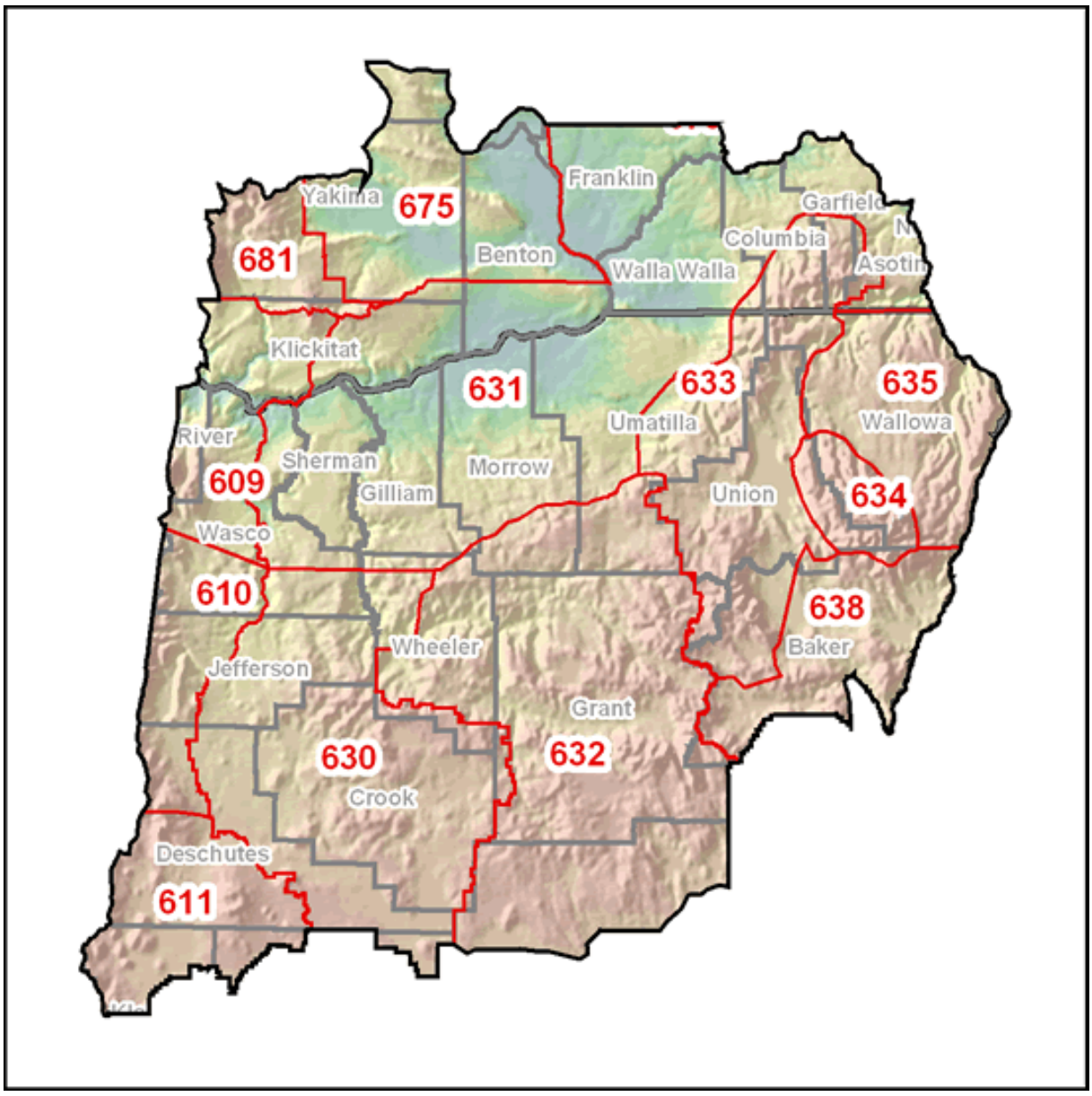
The southern border runs west to east from Satus pass along the Horse Heaven hills to the Columbia River. Form there it runs north along the Columbia River (including the Hanford Reach National Monument) to I-94. Then it follows I-94 west to Ellensburg then turns south to Yakima following I-82. From Yakima it follows the Cascade Foothils south back to Satus Pass.

This area is characterized as a wide river basin with numerous west to east running ridge lines, and smooth rolling hills in the Lower Columbia Basin of Southeast Washington. Elevations range from about 200 ft MSL to just below 4000 ft MSL along the Rattlesnake Hills.

Yakama Alpine District - Fire Weather Zone 681

This represents the southwest portion of Yakima County with is the Yakama Indian Reservation. The agency responsible for fire protection in this area is the Yakama BIA.

This areas covers the east slopes of the southern Cascades crest down to the southern boundary of the Yakima Indian agency. Elevation ranges from near 2000 ft MSL to 12000 ft MSL Mount Adams peak.



Pendleton Fire Weather forecast zones

2005

Boise Fire Weather

Operating Plan

BOISE NWS FIRE WEATHER
ANNUAL OPERATING PLAN - 2005

NEW FOR THE 2005 SEASON

Morning issuance time of the daily fire weather planning forecasts (FWF) will be 0730. Previously it was 0900.

Smoke dispersal parameters in the form of mixing heights and transport winds will continue to be included in the FWF for Idaho fire weather zones, but not SE Oregon.

8-14 Day Outlook will not be included with the morning issuance of the FWF. It will continue to be posted on the afternoon FWF at 1530 MDT.

Idaho Zone groupings have undergone significant configuration and name changes. See section 'A' below for descriptions and maps.

Please reference LAT/LON when requesting spot forecasts rather than T/R/S.

LOCATION

NIFC/National Weather Service Forecast Office
3833 S. Development Ave, Bldg 3807
Boise, ID 83705

HOURS OF OPERATION

Depending on variables such as fuel parameters and customer need, seasonal fire weather hours of operation will be: 0830-1630 MDT.

4/11 through 5/16: One planning forecast will be issued at 1530 MDT.
5/16 through 10/29: Two planning forecasts will be issued at 0730 and 1530 MDT.

Staff meteorologists will be on duty and available at **any time**.

STAFF AND CONTACT INFORMATION

Chuck Redman Fire Weather Program Leader/ IMET
Chuck.Redman@noaa.gov

Coleen Decker Assistant Fire Weather Program Leader/IMET
Coleen.Decker@noaa.gov

John Jannuzzi Meteorologist-in-Charge
John.Janizzi@noaa.gov

Fire Weather Telephone Number (208) 334-9060
Fax Number (208) 334-1662 or (208) 334-1660
Internet Access: http://www.boi.noaa.gov/fwx.htm

FIRE WEATHER SERVICES

A. Description of the Boise Fire Weather District:

West Central Idaho Mountains...

- Zone 400 – Northern Boise BLM
- Zone 401 - West portion of the Payette NF and Southern Idaho Timber Protection Agency (SITPA)
- Zone 402 - East portion of the Payette NF
- Zone 403 - North portion of the Boise NF
- Zone 404 - South portion of the Boise NF

Southwest Idaho

- Zone 408 – Treasure Valley
- Zone 418 – Western Twin Falls district of the Shoshone BLM
- Zone 419 – Owyhee Mountains

Southeast Oregon...

- Zone 636 - Portion of the Burns BLM that lies south of Highway 20.
- Zone 637 - Vale BLM (including Malheur County and the far SE corner of Baker County).

See the appendix for a map delineating the area and zone configuration.

B. Basic Meteorological Services

INTERNET BRIEFING: A daily internet briefing will be offered for all agencies at 0930 MDT, seven days a week once the fire season is underway with sufficient interest. Otherwise it will be offered on Mondays and Thursdays. This briefing will include a general discussion of weather conditions and forecasts for the current day, as well a brief discussion of the extended period. Model data, satellite loops, and other items of interest will be addressed for the forecast period. During the briefing, the appropriate maps will be available via the internet and the Boise Fire Weather website. The briefing will usually last less than 15 minutes, but may be longer as significant fire activity necessitates.

SPOT FORECASTS: http://www.boi.noaa.gov/fwx.htm
Please reference LAT/LON when requesting spot forecasts.
Follow-up phone calls are always encouraged and feedback is extremely useful.

PLANNING FORECASTS: Smoke dispersal parameters in the form of mixing heights and transport winds will continue to be included in the daily fire weather planning forecasts for Idaho, but not SE Oregon. The mixing height is defined as the height above the ground (AGL) through which relatively vigorous mixing will take place due to convection. The transport wind is defined as the average wind speed and direction within the mixing layer.

C. SCHEDULE OF PRODUCTS

Product:	Issuance time: (MDT)
Morning planning forecast	0730
Internet briefing	0930
Afternoon planning forecast	1530
NFDRS point forecast -	1545
NFDRS point forecast - Burns BLM	1630
Fire Weather Watch / Red Flag Warnings	Event-Driven
Spot forecasts	Upon request

D. RED FLAG EVENTS

High to extreme fire danger and dry fuels as defined by the BLM or Forest Service must exist in combination with the following weather conditions:

- "Dry" thunderstorm activity: "Dry" means that thunderstorms will produce less than a tenth (.10") of an inch of rainfall but a considerable amount of lightning. Areal coverage must be at least Widely Scattered (≥15%). Isolated lightning is not enough to warrant a Red Flag Warning.

- The occurrence of lightning after an extremely dry period. Often this means that the thunderstorms will "initially" be dry.

- High Haines index of 6 in conjunction with extremely dry fuels as indicated by land management agencies such as Eastern Great Basin GACC fuels map or Pacific Northwest GACC dryness level forecasts.

- Strong winds and low humidities:
  IDAHO: Wind gusts ≥ 30 mph for 3 hours or more; and relative humidity ≤15%...EXCEPT ≥ 25 mph and RH ≤ 15% in the Boise and Payette NFs.

  OREGON: Sustained (10-minute average) winds ≥ 20 mph and/or wind gusts ≥35 mph for 3 hours or more; and relative humidity ≤10%. Red Flag

  Criteria are considered to be met if conditions are met at any 3 RAWS stations within a combined area of Fire Weather Zone 636 and 637. Alternatively, if a RFW is issued separately for Fire Weather Zones 636 and 637, it is considered to verify if conditions are met at 3 RAWS stations in Zone 636 or 2 RAWS stations in Zone 637.

RED FLAG EVENTS Continued

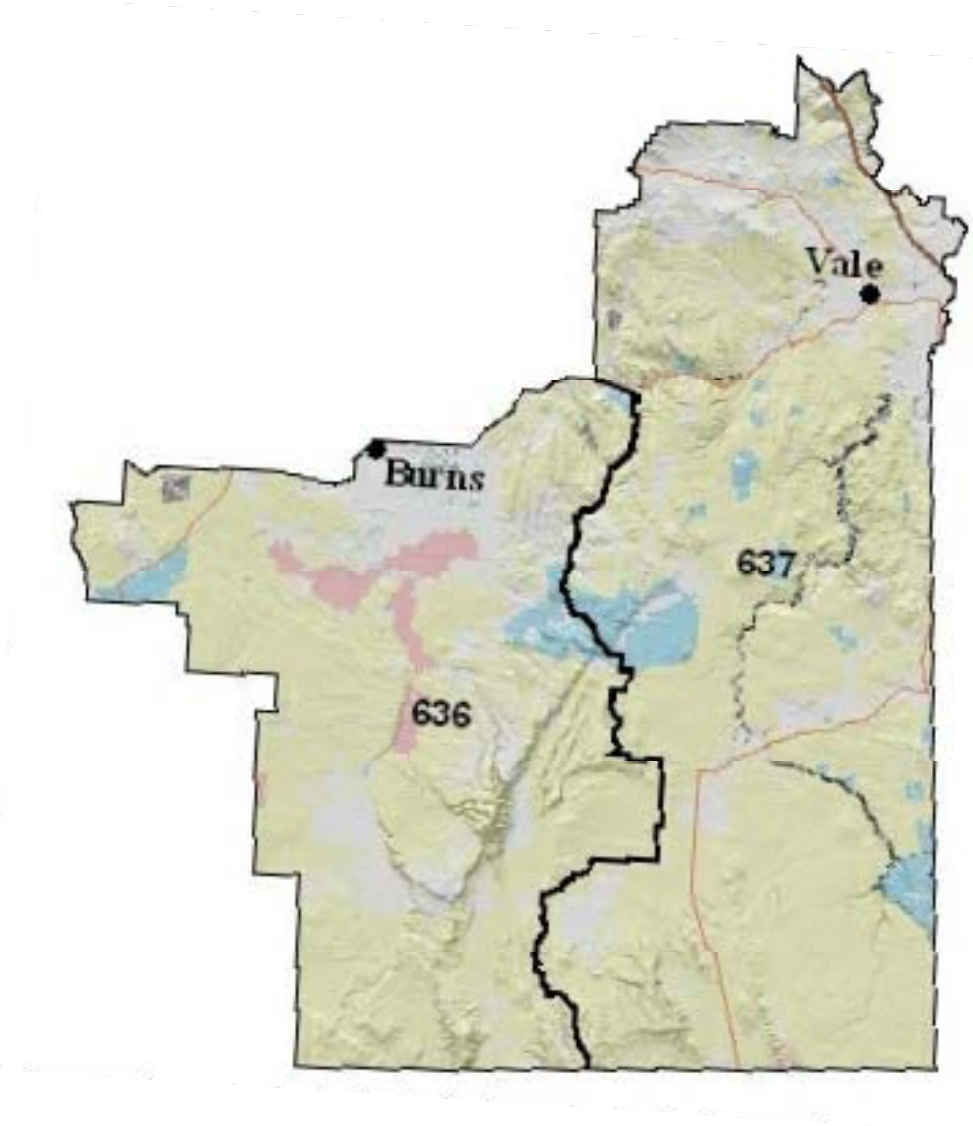
Wind vs. Relative humidity for Burns BLM (636) and Vale BLM (637)

SUSTAINED 20 FT WIND (10-MINUTE AVERAGE in MPH)

	10 mph	15 mph	20 mph	25 mph	30 mph
25%					
20%					W
15%				W	W
10%			W	W	W

Interagency Coordination: Before the issuance of a Fire Weather Watch or Red Flag Warning, there will be coordination with the affected agencies and neighboring NWS fire weather offices in order to assess fuel conditions and general fire danger.

Dissemination of Fire Weather Watches and Red Flag Warnings: Each issuance, update or cancellation of a Fire Weather Watch or Red Flag Warning will be relayed by telephone to the dispatch office(s) affected by the watch/warning.



Boise Fire Weather forecast zones in Oregon

2005 NFDRS Station Index

ZONE	NAME	Type	NUMBER	OWNER	LAT	LON	ELEV
601	Huckleberry	R	450407	DNR	46.50	-123.40	2500
601	Tillamook	R	350208	ODF	45.46	-123.82	60
601	Cedar Creek	R	350215	USFS	45.21	-123.77	2240
602	South Fork	R	350216	ODF	45.58	-123.49	2120
602	Abernathy	R	451209	DNR	46.34	-123.10	2000
602	Miller	R	350308	ODF	46.02	-123.27	1090
602	Rye Mountain	R	350505	BLM	45.24	-123.55	2000
602	Castle Rock	R	451207	DNR	46.31	-122.90	213
603	Wilkinson Ridge	R	351811	BLM	44.33	-123.72	1500
603	High Point	R	352550	BLM	43.91	-123.38	1935
603	Village Creek	R	352547	BLM	44.21	-123.47	1280
603	Rockhouse1	R	351710	ODF	44.93	-123.47	2000
603	Clay Creek1	R	352560	ODF	44.02	-123.21	1500
604	Vancouver	M	451306	DNR	45.70	-122.70	210
604	Finley	R	351813	FWS	44.42	-123.33	330
604	Stayton	R	351911	ODF	44.80	-122.81	469
605	Horse Creek	R	350727	BLM	44.94	-122.40	2000
605	Eagle Creek	R	350728	ODF	45.37	-122.33	744
606	Brush Creek	R	352553	BLM	44.28	-122.85	2121
606	Trout Creek	R	352552	BLM	44.11	-122.58	2400
606	Hawley Butte	R	352549	BLM	43.71	-122.84	3053
606	Yellowstone	R	352024	BLM	44.60	-122.44	3080
607	Log Creek	R	350604	USFS	45.50	-121.89	2500
607	Wanderer's Peak	R	350726	USFS	45.11	-122.20	4350
607	Red Box Bench	R	350718	USFS	45.07	-121.92	3250
607	Blue Ridge	R	350811	USFS	45.52	-121.72	3780
607	Locks	R	350605	ODF	45.67	-121.88	128
607	Si Si Lookout	M	350725	USFS	44.92	-121.83	5617
607	Clear Lake	M	350902	USFS	45.15	-121.58	4458
608	Emigrant	R	352558	USFS	43.47	-122.22	3840
608	Pebble	R	352554	USFS	44.23	-121.98	3300
608	Fields	R	352557	USFS	43.67	-122.30	3360
608	Boulder Creek	R	351909	USFS	44.72	-122.00	3570
609	Pollywog	R	350912	USFS	45.48	-121.45	3320
609	Wamic Mill	R	350913	USFS	45.23	-121.45	3320

610	Mt. Wilson	R	350916	BIA	45.04	-121.67	3980
610	Mutton Mountain	R	350917	BIA	44.93	-121.20	4000
610	HeHe1	R	350920	BIA	44.96	-121.50	2689
610	Metolius Arm	R	352110	BIA	44.61	-121.63	3320
610	Colgate	R	352620	USFS	44.32	-121.61	3280
610	Sidwalter	M	350909	BIA	44.93	-121.53	3000
610	Shitike Butte	M	352102	BIA	44.75	-121.61	5000
610	Eagle Butte	M	352106	BIA	44.84	-121.23	3100
610	Warm Springs	M	352108	BIA	44.76	-121.25	1632
611	Black Rock	R	353342	USFS	43.53	-121.81	4880
611	Lava Butte	R	352618	USFS	43.93	-121.34	4655
611	Tumalo Ridge	R	352621	ODF	44.05	-121.40	4000
611	Teepee Draw	R	352622	USFS	43.83	-121.08	4740
611	Round Mountain	R	352605	USFS	43.76	-121.72	5900
611	Cabin Lake	R	353402	USFS	43.50	-121.06	4650
612	Cannibal	R	351604	USFS	44.35	-123.89	1946
612	Goodwin Peak	R	352545	USFS	43.93	-123.89	1840
612	Dunes	R	352559	USFS	43.95	-124.12	20
615	Powers2	R	352814	USFS	42.87	-124.05	286
615	Seven Mile Creek	R	352820	ODF	43.21	-124.32	506
616	Mt. Yoncalla	R	353043	BLM	43.64	-123.33	1799
616	Signal	R	352816	BLM	43.01	-123.78	3294
616	Charlotte Ridge	R	353046	ODF	43.67	-123.94	1220
616	Long Prairie	R	352819	ODF	42.95	-124.22	1180
616	Burnt Mountain	R	353044	BLM	43.22	-123.84	2240
617	Sugarloaf	R	352546	USFS	43.23	-122.40	3500
617	Cinnamon	R	353031	USFS	43.26	-122.15	4636
617	Grandad	R	353036	USFS	43.41	-122.57	2900
617	Toketee	R	353038	USFS	43.23	-122.39	3360
617	Buckeye	R	353040	USFS	43.04	-122.64	2400
618	Flynn Prairie	R	352922	ODF	42.40	-124.39	1625
619	Bald2	R	352813	USFS	42.40	-124.04	3630
619	Quail2	R	352915	USFS	42.24	-124.04	3033
620	Provolt Orchard	R	353120	BLM	42.28	-123.23	1176
620	Calvert Peak	R	352919	BLM	42.78	-123.73	3822
620	Merlin	R	353122	BLM	42.49	-123.40	1040
620	Onion2	R	353114	USFS	42.28	-123.38	4438
620	Agness2	R	352916	USFS	42.33	-124.02	150

621	Squaw	R	353213	USFS	42.07	-123.01	4964
621	Star	R	353214	USFS	42.15	-123.06	1675
621	Buckhorn	R	353230	BLM	42.12	-122.56	2900
621	Illinois Valley Airport	R	353115	BLM	42.11	-123.67	1389
622	Evans Creek	R	353228	BLM	42.63	-123.06	3200
623	Parker	R	353344	BLM	42.11	-122.28	5250
623	Mt. Stella	R	353209	USFS	42.93	-122.43	4715
623	Zim	R	353227	USFS	42.70	-122.39	4106
623	Seldom Creek	R	353339	USFS	42.41	-122.19	4875
623	Dead Indian	R	353225	USFS	42.29	-122.33	5050
624	Timothy	R	353337	USFS	43.20	-121.37	6020
624	Summit	R	353421	USFS	42.20	-120.25	6147
624	Chiloquin	R	353310	USFS	42.58	-121.89	4517
624	Gerber Reservoir	R	353328	BLM	42.20	-121.14	4940
624	Hoyt	R	353343	USFS	42.97	-121.42	5445
624	Coffee	R	353422	BLM	42.53	-120.64	5250
624	Strawberry	R	353423	USFS	42.20	-120.85	5590
624	Calimus	R	353307	USFS	42.63	-121.56	6622
625	Rock Creek	R	353424	FWS	42.55	-119.66	5640
625	Fish Fin Rim	R	353516	BLM	42.47	-119.18	4900
625	Poor Jug	R	353426	USFS	42.93	-120.11	4600
625	Fort Rock	R	353406	BLM	43.43	-120.84	4430
630	Brer Rabbit	R	352208	USFS	44.33	-119.77	5900
630	Brown's Well	R	353428	BLM	43.56	-120.22	4560
630	Haystack	R	352107	USFS	44.47	-121.13	3240
630	Board Hollow	R	352109	ODF	44.36	-120.41	4120
630	Cold Springs	R	352701	USFS	44.35	-120.13	4695
630	Badger Creek	R	352711	USFS	44.03	-120.41	5680
630	Salt Creek	R	352712	BLM	44.33	-120.67	5670
630	Slide Mountain	R	352207	USFS	44.46	-120.28	5700
631	Wasco Butte	R	350919	ODF	45.61	-121.33	2345
631	Umatilla	R	351316	FWS	45.92	-119.57	270
631	Middle Mountain	R	350812	ODF	45.58	-121.60	2600
631	Goldendale	R	452403	DNR	45.87	-120.72	2054
631	Juniper Dunes	R	453201	BLM	46.36	-118.87	950
631	North Pole Ridge	R	350915	BLM	45.03	-120.54	3480
631	Patjens	R	351001	BLM	45.32	-120.92	2230
631	The Dalles Airport	M	452406	NWS	45.60	-121.10	210
631	Pendleton Airport	M	351307	NWS	45.68	-118.85	1482
631	Walla Walla Airport	M	453302	NWS	46.10	-118.28	1166
632	Tupper	R	351202	USFS	45.07	-119.49	4000

632	Board Creek	R	352330	USFS	44.60	-119.28	5000
632	Case	R	352329	USFS	44.96	-119.03	3800
632	Crane Prairie	R	352305	USFS	44.15	-118.48	5373
632	Fall Mountain	R	352327	USFS	44.30	-119.04	5949
632	Antelope	R	353524	USFS	44.05	-118.75	6460
632	Crow Flat	R	353515	USFS	43.83	-118.93	5130
632	Mitchell	R	352209	ODF	44.58	-120.18	2620
632	Allison	R	353501	BLM	43.92	-119.58	5320
633	Alder	R	453803	USFS	46.27	-117.50	4500
633	Eden	R	351518	USFS	45.93	-117.58	4000
633	JRidge	R	351414	USFS	45.11	-118.34	5180
633	Fox Hill	R	351420	ODF	45.36	-118.13	3608
633	Black Mountain	R	351317	USFS	45.60	-118.24	5425
634	PtProm2	R	351419	USFS	45.35	-117.70	6607
634	Minam	R	351416	USFS	45.11	-118.27	4320
635	Harle Butte	R	351502	USFS	45.32	-116.87	6071
635	Roberts Butte	R	351520	USFS	45.68	-117.36	4263
636	Moon Hill	R	353526	BLM	42.86	-118.68	6100
636	Bald Mountain	R	353522	BLM	43.56	-118.40	5480
636	PHill	R	353521	BLM	42.83	-118.94	4880
636	Foster Flat	R	353525	BLM	42.97	-119.25	4999
636	Basque Hills	R	353520	BLM	42.26	-118.98	4990
636	Riddle Mountain	R	353511	BLM	43.10	-118.50	6281
636	Wagontire	R	353512	BLM	43.34	-119.88	6510
636	Sage Hen	R	353517	BLM	43.52	-119.29	4400
636	Little McCoy Creek	R	353527	BLM	42.71	-118.51	5080
637	Kelsey Butte	R	353613	BLM	43.92	-117.97	5200
637	Owyhee Ridge	R	353614	BLM	43.52	-117.24	4400
637	Red Butte	R	353616	BLM	43.53	-117.80	4460
637	Grassy Mound	R	353612	BLM	42.63	-117.42	4500
638	Morgan Mountain	R	352420	BLM	44.49	-117.30	3600
638	Sparta Butte	R	352418	USFS	44.90	-117.37	4278
638	Blue Canyon	R	352416	USFS	44.67	-117.94	4200
638	Flagstaff Hill	R	352123	BLM	44.81	-117.73	3945
638	Baker Airport	M	352419	NWS	44.83	-117.82	3368
650	Ellis Mountain	R	450130	DNR	48.16	-124.32	2671
650	Quilcene	R	450207	USFS	47.57	-124.15	50
651	Minot Lookout	R	450306	DNR	46.88	-123.42	1768
652	Humptulips	R	450312	USFS	47.37	-123.47	2400

652	Tom Creek	R	450121	USFS	48.02	-123.92	2400
652	Owl Mountain	R	450211	DNR	47.77	-123.97	3398
653	Blue Mountain	R	450127	DNR	48.06	-123.27	750
655	Chehalis	R	451103	DNR	46.60	-122.90	245
657	Enumclaw	R	451702	DNR	47.20	-122.00	742
658	Marblemount	R	451504	NPS	48.54	-121.45	357
658	Sumas	R	451415	DNR	48.91	-122.23	3200
658	Kidney	R	451409	USFS	49.00	-121.90	3000
658	Finney	R	451509	USFS	48.40	-121.80	1900
658	Johnson	R	451611	USFS	47.80	-121.27	2000
658	Gold Mountain	R	451613	USFS	48.20	-121.50	3400
659	Kosmos	R	451105	DNR	46.60	-122.20	2100
659	Greenwater	R	451718	DNR	47.16	-121.61	2400
659	Ohanepcosh	R	451119	NPS	46.73	-121.57	1925
659	Hagar	R	451115	USFS	46.57	-121.63	3600
659	Lester	R	451705	USFS	47.20	-121.50	1615
659	Orr Creek	R	451919	USFS	46.35	-121.60	3000
660	Hamilton Mountain	R	451928	DNR	45.67	-122.01	3000
660	Elk Rock	R	451208	DNR	46.35	-122.61	2500
660	Canyon Creek	R	451921	USFS	45.92	-122.17	2480
660	Trout Lake	R	451917	USFS	46.10	-121.71	3615
661	Cougar	R	450117	USFS	47.92	-123.12	3000
661	Jefferson	R	450911	USFS	47.55	-123.17	2200
661	Hurricane Ridge	R	450124	NPS	47.97	-123.50	5280
662	Stehekin	R	452121	NPS	48.35	-120.72	1230
673	Escure	R	453601	BLM	47.07	-117.98	1725
673	Columbia NWR	R	453102	FWS	46.87	-119.33	890
673	Spring Canyon	R	453002	NPS	47.93	-118.93	1340
673	Saddle	R	452701	FWS	46.69	-119.69	650
673	Entiat	R	452136	USFS	47.67	-120.21	796
673	Aeneas	R	452001	DNR	47.70	-119.60	5167
673	Douglas	R	452601	BLM	47.62	-119.90	2530
673	Yakima	M	452313	NWS	46.57	-120.54	1066
675	Hanford	M	452802	DOE	46.56	-119.60	682
675	Saddle Mountain	R	452701	FWS	46.69	-119.69	650
677	Dry Creek	R	452134	USFS	47.72	-120.53	3480
677	Camp4	R	452132	USFS	48.02	-120.23	3773

680	Peoh Point	R	452206	DNR	47.15	-120.95	4020
680	Sawmill Flats	R	452221	USFS	46.98	-121.08	3500
680	Sedge Ridge	R	452306	DNR	46.58	-120.90	4300
681	Signal Peak	R	452307	BIA	46.23	-121.14	5052
681	Grayback	R	452404	DNR	45.99	-121.08	3766
681	Mill Creek	R	452304	BIA	46.27	-120.87	2820
681	Teepee Creek	R	452317	BIA	46.16	-121.03	2980
682	Viewpoint	R	452128	USFS	47.85	-120.87	3760
682	Swauk	R	452219	USFS	47.25	-120.67	3773
682	Alpine Lookout	M	452127	USFS	47.80	-120.85	6237
684	NCSB	R	452030	USFS	48.43	-120.14	1650
684	Oroville	R	452039	BLM	48.96	-119.49	1360
684	Nespelem	R	452009	BIA	48.21	-119.02	1782
684	Douglas Ingram Rdg	R	452035	USFS	48.12	-120.10	3460
684	Kramer	R	452040	BIA	48.27	-119.52	2720
685	83Monument	R	452036	USFS	49.00	-120.65	6500
685	Leecher	R	452020	USFS	48.25	-120.00	5019
685	First Butte	R	452006	USFS	48.62	-120.11	5500
686	Turnbull	R	453506	FWS	47.41	-117.53	2250
686	Midnite Mines	R	452913	BLM	47.94	-118.09	2693
686	Pal Moore Orchard	R	452915	USFS	48.39	-117.43	3120
686	Kettle Falls	R	452916	NPS	48.61	-118.12	1310
686	Tacoma Creek	R	453413	USFS	48.49	-117.43	3300
686	Little Pend Oreille	R	453416	FWS	48.27	-117.43	2020
686	Deer Mountain	R	453412	USFS	48.80	-117.45	3300
686	Wellpinit	R	452918	BIA	47.88	-118.10	2240
686	Colville	M	452903	DNR	48.50	-117.90	1730
686	Spokane Airport	M	453505	NWS	47.60	-117.50	2365
687	Peony	R	452038	USFS	48.59	-119.21	3600
687	Brown Mountain Ochd	R	452514	USFS	48.54	-118.69	3210
687	Owl Mountain	R	452513	USFS	48.94	-118.30	4400
687	Lane Creek	R	452511	USFS	48.61	-118.28	4500
687	Gold Mountain	R	452510	BIA	48.18	-118.49	4636
687	Iron Mountain	R	452512	USFS	48.56	-118.62	4325
687	Lost Lake	R	452029	USFS	48.87	-119.06	3760
	BurntR		352818	BLM	43.20	-123.72	2982
	DevilsG		353047	BLM	43.72	-123.63	1548

Appendix

- **Link to Interagency Agreement for Meteorological Services**

http://www.nws.noaa.gov/directives/010/pd01004006a.pdf

- **Link to information regarding on-site meteorological support.**

http://www.nws.noaa.gov/directives/010/pd01004002c.pdf

- **Link to information regarding national NWS forecaster training and development standards.**

http://www.nws.noaa.gov/directives/010/pd01004002c.pdf